# An innovation theory of harm for digital mergers

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*Published in:*
Revue du Droit des Technologies de l'information

*Publication date:*
2022

*Document Version*
Publisher's PDF, also known as Version of record

# An Innovation Theory of Harm for digital mergers

## Does the importance of innovation within the digital sector justify the adoption of an innovation theory of harm by the Commission in its merger control?

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*The theory of harm applied by the Commission to control mergers is a classical control where the focus is mostly put on the price and output. Nowadays, this static approach runs counter the dynamic aspect of digital markets for which innovation is the key parameter. These markets call for a more dynamic assessment of digital mergers. The Commission had to depart from its traditional control to find a better-suited test able to capture the perspectives of innovation.*

*This paper aims at providing a better understanding of the evolution of the Commission's merger control towards a new innovation theory of harm where Competition law aims at creating a level playing field for competitors to innovate and challenge the established market power.*

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*La théorie du préjudice appliquée par la Commission pour contrôler les fusions est un contrôle classique où l'accent est mis principalement sur le prix et la production. Aujourd'hui, cette approche statique va à l'encontre de l'aspect dynamique des marchés numériques pour lesquels l'innovation est le paramètre clé. Ces marchés appellent une évaluation plus dynamique des fusions numériques. La Commission a donc dû s'écarter de son contrôle traditionnel pour trouver un test mieux adapté, capable de saisir les perspectives d'innovation.*

*Cet article vise à fournir une meilleure compréhension de l'évolution du contrôle des concentrations par la Commission vers une nouvelle théorie de l'innovation où le droit de la concurrence vise à créer des conditions de concurrence équitables pour que les concurrents puissent innover et remettre en question le pouvoir de marché établi.*

### INTRODUCTION

Innovation competition can be defined as the rivalry between undertakings to improve or create new products or technologies.[1] Today, innovation is seen as the most promising way to interfere with current market power and dethrone the market leaders. In a world in which we observe a general movement toward the consolidation of firms,[2] the

[1] H.-W. Gottinger, "Innovation, Dynamics of Competition and Market Dynamics", *Archives of Business Research*, vol. 4, n° 1, 2015, p. 8.

[2] M. Todino, G. van de Walle and L. Stoican, "EU Merger Control and Harm to Innovation–A Long Walk to

control of mergers by the Commission cannot ignore innovation. In this context, Competition law aims at creating a level playing field for competitors to innovate, in order to challenge the established market power.[3] The fact that mergers between significant innovators generally cannot fall under the simplified procedure is another evidence that the Commission is aware of the risk that such transactions might represent.[4]

"Traditionally, the Commission through its decisions has developed various theories of harm in merger control such as unilateral effects, coordinated effects, vertical effects, leverage of market power, market division, market foreclosure, etc".[5] Those theories were part of the classical control of the Commission in which the focus was mostly put on the price and output. Nowadays, those static approaches run counter the dynamic aspect of some markets for which innovation is the key parameter. For those markets, the Commission had to depart from its traditional control to find a better-suited test, able to capture the perspectives of improved and new products or technologies over a long time horizon.[6] Among the innovation-driven sectors, the digital one is the most concerned by this debate. The features of digital markets make the current merger control obsolete and call for a more dynamic assessment of digital mergers.

This paper aims at providing a better understanding of the evolution of the Commission's merger control. In the first part, we will trace the transition from the traditional analysis that considers innovation as a parameter of competition to a new innovation theory of harm. This evolution was the result of the incorporation of innovation concerns into the Commission's screening of innovation-driven sectors. In the second part, we will focus on the digital industry, its characteristics, and the reasons why we call for an innovation theory of harm.

## I. THE TRADITIONAL MERGER CONTROL

Regarding the introduction of innovation considerations in the merger control, Pablo Ibanez Colomo uses a *summa divisio* between the direct and indirect role of innovation. The latter refers to the situation in which innovation is taken into account in the traditional two-step control of the Commission. In that case, the Commission in its competitive assessment of market power looks at the negative impact of the merger on innovation. We will address this situation where innovation is a parameter analysed by the Commission together with price and quantity in its merger control in the first chapter. Innovation also serves as direct consideration when it constitutes the ground for the Commission's intervention. In other words, the Commission is concerned about the effect of the merger on innovation in itself. This will be discussed in the second chapter.[7]

We stress as of now that to be the most relevant, the case law studied below pertains to sectors in which innovation is fundamental. In those industries, the innovative process

Freedom (from the Chains of Causation)", *The Antitrust Bulletin,* 2018, p. 3.

3 P. I. Colomo, "Restriction on Innovation in EU Competition Law", LSE Working Papers, n° 22, 2015, p. 17.

4 Commission Notice on a simplified procedure for the treatment of certain concentrations under Council Regulation (EC) No. 139/2004, *O.J.*, C. 366, 14 December 2013, § 11.

5 M. Chadha, *Innovation Competition in EU Merger Control and its evolution in DOW/DuPont*, 2019, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3417572, p. 1.

6 M. Laskowska, "Dynamic Efficiencies and Technological Progress in EC Merger Control", CCLP Working Paper, 2013, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2336956, p. 3.

7 P. I. Colomo, "Restriction on Innovation in EU Competition Law", *op. cit.*, p. 3.

can be divided in phases, the first one being the discovery stage. After at least three years of discovery stage, comes the development, manipulation, and testing stages, to eventually commercialize a product.[8] The best examples are the pharmaceutical or agrochemical sectors in which the R&D efforts usually pursue a defined product market from the outset.[9] It makes us realize that the Commission's focus moved further in the developing process toward the early stage of innovation.

## Chapter 1. The shift toward the innovative theory of harm

### *1. Innovation as a parameter of the traditional theory of harm*

According to the Merger Regulation, the Commission assesses whether the merger "raises serious doubts as to its compatibility with the common market".[10] First, the Commission delineates the relevant geographic and product market using a substitutability criterion. In order to do that, the Commission applies the "small but significant non-transitory increase in price" (SSNIP) test. Then, the Commission assesses the concentration of market power by looking at the market shares and other factors such as imminent entry of competitors or consumer bargaining power. The goal is to see if, after the merger, there will still be competitive pressure on the merged entity. If the merger seems anti-competitive, the parties can then demonstrate that the merger also creates positive effects which can make up for the negative ones.[11] EU competition law is traditionally based on a static approach focusing on how the merger will modify the structure of the relevant market and change market power.

The mission of the Commission is to prevent mergers that would "deprive consumers of the benefit of competition, including innovation, by significantly increasing the market power of firms".[12] This principle has been accepted for a long time by the Commission. In other words, the Commission's decision depends on whether the competitive pressure faced by the undertakings active in the relevant market would significantly decrease post-merger.[13-14]

When the Commission is confronted with a merger in an industry in which competition is primarily based on innovation and to a lesser extent on price or output, it will put more emphasis on the effect of the merger on innovation when applying its traditional test.[15]

8 N. Petit, "Innovation Competition, Unilateral Effects, and Merger Policy", *Antitrust Law Journal*, vol. 82, n° 3, 2019, p. 879.

9 For example, the development of a precise drug to treat a specific condition.

10 Council Regulation (EC) No. 139/2004 of 20 January 2004 on the control of concentrations between undertakings (EC Merger Reg.), *O.J.*, L. 24, 29 January 2004, art. 6.

11 M. L. Katz and H. A. Shelansky, "Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?", in A. B. Jaffe, J. Lerner and S. Stern (eds), *Innovation Policy and the Economy*, The MIT Press, vol. 5, 2005, p. 120.

12 N. Jung and E. Sinclair, "Innovative theories of harm in merger control: plugging a perceived enforcement gap in anticipation of more far-reaching reforms?", *European Competition Law Review*, vol. 40, n° 6, 2019, p. 270.

13 Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (Horiz. Merg. Guidelines), *O.J.*, C. 31, 5 February 2004, § 8.

14 P. I. Colomo, "Restriction on Innovation in EU Competition Law", *op. cit.*, p. 7.

15 *Ibid.*, p. 8; see Commission decision of 26 July 2012, COMP/M.6410, UTC/ GOODRICH, §§ 417-421 and Commission decision of 1 February 2012, COMP/.6166, DEUTSCHE BÖRSE / NYSE EURONEXT, §§ 1129-1130; confirmed by the Judgment of the General Court of 9 March 2015, T-175/12, *Deutsche Börse AG v. Commission*, §§ 171-178.

### 2. *The gradual incorporation of the innovation theory of harm in the case law*

The introduction of innovation in the competition authority's control can be divided into two stages. In the first one, the mergers concern firms with "product-to-pipeline" overlaps. It means that the overlap happens between the first firm's existing product and the product of the second firm which is only at the developing stage but that will most probably become a competitor in the near future. The second stage relates to "pipeline-to-pipeline" overlaps.[16] In this category, both firms are still at the developing stage for products that would likely be competitors after being commercialized.[17] The Dow/DuPont merger illustrate the paroxysm of an evolving case law toward a greater focus on innovation. In this case, the Commission expressly applied for the first time a loss of innovation theory of harm.

#### *a. Future market and potential competition*

The easiest way for the Commission to deal with dynamic markets while staying loyal to the traditional merger control was to use the concept of "potential competition" and "future markets". In both cases, the competition authority conducts its assessment from the standpoint of a specific product. At the same time, when the Commission looks at whether significant competitive constraints would still be present after the merger, it uses the potential competition to see potential competitors and imminent market entry.[18] According to the Horizontal Merger Guidelines, "the potential competitor must already exert a significant constraining influence on the scope of action of the other party or there must be a significant likelihood that it will grow into an effective competitive force".[19] Next to potential competition, the concept of future market has also proven itself to be very useful in innovation-driven sectors in which R&D efforts can lead to the development of new products creating new markets. "A focus on future markets would mean that the competition authority would protect competition on a market that is not yet there, but that is likely to soon come to fruition thanks to innovation".[20] However, when relying on future market and potential competition, the Commission remained cautious by only taking into account phase III products, whose entry into the market was imminent.

In the J&J/Guidant merger,[21] the potential competition was assessed by the Commission as countervailing power ensuring that new entrants will assert sufficient competitive pressure on the merged entity. In Medtronic/Covidien,[22] Covidien was identified as an imminent entrant on the market for drug-coated balloons to treat vascular diseases whereas Medtronic was already established. If in J&J/Guidant the exterior potential competition permits the clearance of the transaction, in Medtronic/Covidien the Commission prohibited the merger because potential competition

16 "Product-to-pipeline" and "pipeline-to-pipeline" are respectively called "Incumbent and potential entrant" and "Pure innovation rival" in Shapiro's classification. C. Shapiro, "Competition and Innovation: Did Arrow Hit the Bull's Eye?", in J. Lerner and S. Stern (eds), *The rate and direction of Inventive Activity Revisited*, Chicago, University of Chicago Press, 2012, p. 390.

17 G. Federico, F. Scott Morton and C. Shapiro, *Antitrust and Innovation: Welcoming and Protecting Disruption*, 2019, available at: https://ssrn.com/abstract=3393911, pp. 11-13.

18 M. Todino, G. van de Walle and L. Stoican, "EU Merger Control and Harm to Innovation–A Long Walk to Freedom (from the Chains of Causation)", *op. cit.*, p. 6.

19 Horiz. Merg. Guidelines, § 60.

20 R. De Coninck, "Innovation in EU Merger control: in need of a consistent framework", *Competition Law & Policy Debate*, vol. 2, September 2016, p. 46.

21 See Commission decision of 25 August 2005, COMP/M.3687, JOHNSON&JOHNSON / GUIDANT.

22 See Commission decision of 28 November 2014, COMP/M.7326, MEDTRONIC/ COVIDIEN.

allowed to consider the merging entities as direct competitors.[23]

As pointed out above, the two above-mentioned cases covered phase III innovations in cardiovascular device sectors.

The late-stage products are "so close to the commercialisation stage that innovation outcome has been regarded as sufficiently predictable as to be amenable to the standard, static analysis".[24]

*b. Further down the pipeline*

On several occasions, the Commission suggested that it had to define a product market affected by the merger and that it could not simply state that the merger harms innovation in itself. This happened for mergers in the pharmaceutical field such as the merger between Medtronic and Covidien,[25] Glaxo and Wellcome,[26] or Bayer and Aventis Crop Science.[27] Progressively, the Commission backtracked on that thought to gradually distance itself from any existing or future product and, instead, looked at the impact of the merger on the R&D rivalry.[28] The Commission still identified more or less precisely some products concerned by the transaction but did not limit itself to Phase III products anymore and intervened earlier in the development process.

In that regard, the Novartis/GlaxoSmithKline (GSK) Oncology Business merger gives some insight. Novartis and GSK were both developing treatments for cancers for which they were only at stage I or II. Surprisingly, the Commission assessed early-stage research which were only at clinical trial stage and presented an inherent uncertain prospect of entering the market. The Commission recognized that the merging firms were "entities currently developing new products or technologies which either may one day replace existing ones, or which are being developed for a new intended use and will therefore not replace existing products but create completely new demand. In principle, the effects of a concentration on competition in innovation in this type of situation may not be sufficiently assessed by restricting the assessment to actual or potential competition in existing product markets".[29]

At the time of the Pfizer/Hospira merger, the Commission feared that if Pfizer were to merge with Hospira, it would deviate its R&D effort on Hospira's products and wander away from its pipeline biosimilar. Despite a lack of clinical evidence about the likelihood of success for Pfizer's product and that it was years away from entering the market of biosimilars, the Commission took the view that if Pfizer gave up its efforts in developing this molecule, there would be only one credible actor left on this market. This would be a significant loss of competition.[30]

This longer time horizon allows for a broader view of all potential and future competition constraints. By expanding its reach, the Commission acknowledges that risks for future

23 M. Todino, G. van de Walle and L. Stoican, "EU Merger Control and Harm to Innovation–A Long Walk to Freedom (from the Chains of Causation)", *op. cit.*, p. 6.

24 V. Denicolo and M. Polo, "The innovation theory of harm: An appraisal", IEFE-Bocconi Working Paper, n° 103, 2018, p. 2.

25 See Commission decision of 28 November 2014, COMP/M.7326, MEDTRONIC/ COVIDIEN.

26 See Commission decision of 28 February 1995, IV/M.555, GLAXO / WELLCOME, § 9.

27 See Commission decision of 17 April 2002, COMP/M.2547, Bayer/ Aventis Crop Science, § 18.

28 N. Jung and E. Sinclair, "Innovative theories of harm in merger control: plugging a perceived enforcement gap in anticipation of more far-reaching reforms?", *op. cit.*

29 Commission decision of 28 January 2015, COMP/M.7275, NOVARTIS/ GLAXOSMITHKLINE ONCOLOGY BUSINESS, § 89.

30 *Ibid.*, p. 10; Commission decision of 31 May 2016, M.7559, Pfizer/ Hospira.

competition are not considered in its control if the assessment cannot go beyond the notions of existing or future relevant market. But the other side of the same coin is that the earlier the development process of a product, the more speculative the assessment by the Commission turns out to be.

### *3. The Dow/DuPont merger*

The Dow/DuPont[31] case is the climax of a progressive evolution toward a new theory of harm in which harm is caused to innovation at the industry level. The control of this merger requested a phase II investigation giving the Commission the opportunity of indulging in an in-depth analysis.

Dow and DuPont are two firms active, *inter alia,* in the agrochemical sector. The investigation showed that the merging parties had overlapping R&D activities from the discovery and throughout every stage of the products' life-cycle. The Commission acknowledged its inability to link precisely R&D activities to a particular product market but seemed to find it irrelevant to decide that the merger would weaken competition by reducing the firm's future efforts to innovate.

A theory of harm to innovation does not necessarily require overlaps in the parties' pipeline products. What is fundamental is how the merger will affect "R&D efforts which have not yet taken the shape of a concrete product"[32] and remove the parties "incentives to both pursue parallel R&D and bring new products to the market".[33]

The real novelty brought by Dow/DuPont is the reference to "innovation spaces" instead of an identified product market.[34] The Commission's analysis focuses on an extremely early stage of R&D in which uncertainty is so high, that no downstream product market can be identified as such. The Commission admitted that it could not identify which pipeline would be discontinued after the merger, but it found that the merger would be a significant impediment to innovation in any case.

The other contribution made by this case law concerned the competitive assessment. The Commission took a two-step approach when assessing how the merger could harm competition. In the short term, the merged entity is likely to discontinue R&D efforts if both firms are active to find the same result.[35] The Commission went further by assessing the long-term effect of the merger which would reduce the "overall incentive to undertake innovation". This double-layered concern is not new.[36] What deserves more attention is that the Commission expressly applied the unilateral effect model, usually used for price, to innovation.

## Chapter 2. The features of an innovative theory of harm

Despite the growing importance given to innovation in the merger control before Dow/DuPont, the reasoning of the Commission was still anchored to a foreseeable downstream

31 Commission decision of 27 March 2017, M.7932, Dow/DuPont.

32 M. Todino, G. van de Walle and L. Stoican, "EU Merger Control and Harm to Innovation–A Long Walk to Freedom (from the Chains of Causation)", *op. cit.*, p. 11.

33 *Ibid.*

34 In Glaxo Wellcome/SmithKline Beecham, the Commission used the terminology "R&D market" and "reduction of overall R&D potential". Commission decision of 8 May 2000, COMP/M.1846, GLAXO WELLCOME / SMITHKLINE BEECHAM, §§ 71, 174, 177 and 204.

35 Commission decision of 27 March 2017, M.7932, Dow/DuPont, § 3056.

36 In General/Alstom, we can see the combination of the short-term concern that GE would shut down Alstom's heavy duty gas turbines R&D and long-term concern of lessening of innovative incentives in the future. Commission decision of 8 October 2015, M.7278, General Electric / Alstom.

product market.[37] The idea behind a new theory of harm is that a merger which appears harmless under the static established control, may diminish innovation and decrease competition from a dynamic point of view if it creates a generic prejudice to the firm's incentive and ability to innovate.

This "Innovative theory of harm" (IToH)[38] affects the commission's traditional two-step approach of identifying the relevant market and assessing the competitive state of the market. First, the assessment is not done within a specific product market at the downstream level anymore but instead contemplates the industry as a whole (1). Second, the Commission decides whether the merger is likely to harm innovation in itself (2).[39] However, for this new theory to be implemented, it must be consistent with the current legal and economic framework (3) while not succumbing to the weight of the criticisms it is already subject (4).

### *1. The relevant market*

Traditionally, the delimitation of a relevant market enables the identification of firms competing in it and exercising effective constraint on each other.[40] The relevant market is a tool to facilitate the authority's investigation and not an end in itself.[41] P. I. Colomo reacted to this assertion by saying that: "if that is the case, it is difficult to argue that the definition of the relevant market is, as a matter of law, a prerequisite for intervention".[42] Relying solely on the market that exists at the time of the merger control is too restrictive to have a comprehensive view on all effects that the merger can have on innovation. By definition, the innovation called "disruptive", especially present in the digital sector, aims at creating a new market and have significant effects on the industry.[43] Furthermore, economists already stated that the delimitation of a product market was not necessary to analyse the economic effects of the merger. In practice however, it is still used by the Commission.[44]

It is incoherent to use the SSNIP test, based on price and substitutability. First, because the price is not the most relevant parameter in innovation-driven sectors and because it assumes that other competitors hold their offers constant which does not stand in a dynamic environment in constant evolution.[45] Second, we assume that once the market is defined, it will stand still when in fact it does not. Besides, the Commission tends to identify narrow relevant markets.[46] Therefore, the

37 N. Petit, "Significant Impediment to Industry Innovation: A Novel Theory of Harm in EU Merger Control?", ICLE Antitrust & Consumer Protection Research Program: White Paper, n° 1, 2017, pp. 4-5.

38 Also called the "significant impediment to industry innovation theory (SIII) or Significant impediment to effective innovation competition (SIEIC)".

39 M. Todino, G. van de Walle and L. Stoican, "EU Merger Control and Harm to Innovation–A Long Walk to Freedom (from the Chains of Causation)", *op. cit.*, p. 2.

40 P. I. Colomo, "Restriction on Innovation in EU Competition Law", *op. cit.*, p. 5.

41 W. Kerber, "Competition, Innovation, and Competition Law: Dissecting the Interplay", MAGKS Joint Discussion Paper Series in Economics, n° 42-2017, 2017, p. 12.

42 P. I. Colomo, "Horizontal mergers and innovation: why I agree with Tommaso Valletti", 23 March 2018, available at: https://chillingcompetition.com/2018/03/23/horizontal-mergers-and-innovation-why-i-agree-with-tommaso-valletti/.

43 J. Drexl, "Anti-competitive stumbling stones on the way to a cleaner world: Protecting competition in innovation without a market", Max Planck Institute for Intellectual Property and Competition Law Research Paper, n° 12-08, 2012, p. 4.

44 M. L. Katz and H. A. Shelansky, "Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?", *op. cit.*, p. 117.

45 C. Pleatsikas and D. Teece, "The analysis of market definition and market power in the context of rapid innovation", *International Journal of Industrial Organization*, vol. 19, 2001, pp. 669-672.

46 D. Teece and M. Coleman, "The meaning of monopoly: antitrust analysis in high-technology industries", *The Antitrust Bulletin*, vol. 43, 1998, pp. 826-828.

merger will be considered to have conglomerate effects whereas a broader market would allow to consider the operation as a horizontal merger. Since those are the most detrimental mergers for competition, they deserve extra attention by the Commission.

For the first time in Dow/DuPont, the Commission used the terms "innovative spaces". Despite the absence of a definition, it encompassed R&D efforts from the early stage (discovery stage) to more advanced-stage products.

The use of the new concept of "innovative spaces"[47] to step away from a product market proves that the firms competing on R&D are not necessarily the same as the ones considered as rivals at the product market level.[48]

### *2. The competitive assessment*

Market shares are volatile and quickly obsolete in dynamic markets in perpetual evolution and not observable at all in future markets.

The SIEIC theory identifies two types of harm to innovation competition. Firstly, the short-term harm, which implies that the merged entities have increased incentives to discontinue, delay or reorient the "overlapping lines of research and early pipeline products which target the same innovation spaces".[49] Secondly, the Commission assesses the long-term effect of the merger on the incentive and ability to innovate.

The core question of the competitive assessment is whether there are enough remaining independent firms capable of continuing R&D efforts after the merger. If concentration cannot be measured by market shares or market shares-based indicators such as the Herfindahl–Hirschman Index (HHI), the simplest way would be to rely on a basic assessment of the number of firms active on the market.

### *3. The conditions for a new theory of harm*

One thing is to identify a new theory of harm, another is to shift the paradigm. According to Nicolas Petit, the move from the traditional merger control to the SIII theory can only happen if two conditions are met. Firstly, the new theory of harm must be permitted by the current legal framework and secondly, it must be supported by economic theories.

From a legal point of view, some people argue that when the Horizontal Merger Guidelines speak about "two companies with 'pipeline'

47 Gilbert and Sunshine developed the concept of "innovation market" while wondering "whether the merger can be deemed injurious to competition on the separate upstream innovation market that is the R&D process itself". To define this innovation market, Gilbert and Sunshine recommend to ask five questions: "whether the firms' R&D activities overlap, to what extent there are alternative sources of innovation, whether the merged firms are able and have incentives for reducing their R&D activities through unilateral or coordinated behaviour, whether the threat of other innovating competitors does not make this a possible or profitable strategy and finally, whether an expected reduction of R&D investments through the merger could be defended through innovation-related efficiencies". Whereas "innovative space" is precisely used to depart from any product market, the link between the upstream market and a downstream product is a prerequisite for the innovation market. R. J. Gilbert and S. C. Sunshine, "Incorporating Dynamic Efficiency Concern in Merger Analysis: The Use of innovation markets", *Antitrust Law Journal*, vol. 63, n° 2, 1995, pp. 595-597.

48 N. Petit, "Significant Impediment to Industry Innovation: A Novel Theory of Harm in EU Merger Control?", *op. cit.*, p. 8.

49 M. Chadha, *Innovation Competition in EU Merger Control and its evolution in DOW/DuPont*, *op. cit.*, p. 5; The risk of discontinuation of R&D efforts post-merger can only be a concern if the firms actually have the ability to shut down some R&D division as they want. They can decrease the investment in research, but human resources are not as flexible as money, constrained by employment contracts and labour regulation which makes it less easy to get rid of a part of the staff or move it to another division. Even if it is possible to let workers go, there is still a risk of involuntary spillover if they are poached by competitors.

products related to a specific product market" as an example, it would mean that it does not exclude a different situation involving rivals competing on innovation absent any identifiable pipeline product.[50] We tend to follow this approach which reconciles the possibility of a new theory of harm and the Merger Guidelines.

The fulfilment of the economic condition is more questionable. Indeed, there are almost as many models as economists who tried and are still trying to describe the relationship between concentration and innovation. It all started with the original opposing views of Schumpeter and Arrow in the mid-nineties. According to the first one, mergers are most likely to spur innovation because the monopolist generally possesses more resources to invest in innovation.[51] This reasoning errs on the side of non-intervention by competition authorities. On the other hand, Arrow defends that concentration of firms decreases their keenness to innovate.[52] By improving its product, the monopolist will not attract many more customers because it already has them. Furthermore, in the absence of any threat of market entry, the dominant undertaking does not fear the "replacement effect" or "arrow effect" and has no interest in innovating. In other words, Arrow reintroduced competition law as relevant to spur innovation.[53]

Aghion found a way to conciliate those opposing views by departing from a linear relationship to prefer an "inverted-U curve". It means that neither market power concentrated in the hand of one firm nor perfectly balanced between all firms is optimal for innovation.[54]

Since Schumpeter, Arrow and Aghion, lots of diverging economic theories appeared[55] but there is no consensus about the relationship between concentration and innovation. As a result, a new innovation theory of harm cannot assume that mergers are detrimental to innovation. We propose to react to this lack of sound economic theory by adopting a case-by-case analysis of the market structure *in concreto* associated with an objective fact-finding investigation as it was done in the Dow/DuPont case law.

### *4. Critics of the innovative theory of harm*

The most salient criticisms against the innovation theory of harm are threefold. First, it is argued that the level of harm caused to innovation by a merger cannot be measured (a). Second, the counter-factual exercise that the Commission would have to undertake to assess the effects of the merger leaves room for arbitrariness (b). Finally, the use of efficiencies as a defence when a merger is found to be anti-competitive does not capture the importance of these efficiencies (c). Those criticisms are addressed below.

#### *a. The measurement of innovation*

According to the European Commission, "innovation can be measured in various ways, and

50 M. Chadha, *Innovation Competition in EU Merger Control and its evolution in DOW/DuPont*, *op. cit.*, p. 5.

51 J. A. Schumpeter, "Capitalism, Socialism, and Democracy", 1942.

52 K. J. Arrow, "Economic Welfare and the Allocation of Resources for Invention", in R. R. Nelson, *The Rate and Direction of Inventive Activity: Economic and Social Factors*, Princeton University Press, 1962, p. 619.

53 J. Baker, "Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation", *Antitrust Law Journal*, vol. 74, n° 3, 2007, pp. 578-582.

54 P. Aghion, N. Bloom, R. Blundell, R. Griffith and P. Howitt, "Competition and Innovation: An Inverted-U Relationship", *The Quarterly Journal of Economics*, vol. 120, n° 2, 2005, p. 714.

55 See M. Motta and E. Tarantino, "The Effect of Horizontal Mergers, When Firms Compete in Prices and Investments", University of Mannheim / Department of Economics Working Paper Series, 17-01, 2017, p. 35; V. Denicolo and M. Polo, "The innovation theory of harm: An appraisal", *op. cit.*, p. 3.

only rarely is any single measure sufficient for an encompassing evaluation and all measures have limitations".[56] The Deutsche Borse /NYSE Euronext[57] and the Ryanair/Aer Lingus[58] cases confirmed that the effective impediment to competition can be proven by proxy.[59] "Thus, indirect or qualitative factors, such as those resulting from an analysis of the features of the relevant market, are sufficient to take action".[60] Yet, the mere fact that the merger will lead to the reduction of competitive pressure because the number of competitors decreases is not sufficient to indicate the effect of the merger on innovation. It would be the exact same thing as assuming that all mergers are bad for innovation, which is obviously incorrect. There is no undeniable link between the loss of rivalry and innovation so the concentration of the market cannot serve as a compelling proxy for innovation.[61]

### § 1. R&D

Another possibility is for the Commission to look at the merged entity R&D expenditure in comparison with the merging entities aggregated ante-merger R&D spending. However, R&D expenses are not as easily manipulated as price. "There are significant sunk costs and fixed costs associated with R&D which cannot be easily scaled up or down and R&D spending is unlikely to be clearly allocated to defined product or geographic market".[62] Besides, the resources put into R&D do not reflect the level of innovation the firm will reach. Innovation is by nature an uncertain process. R&D intensity is more accurate than R&D expenditure.

### § 2. Patent

Patents are typically a way for firms to secure the appropriability of their innovation. For that reason, patents could serve as an indicator for innovation.

Nonetheless, each patent can bear a different value.[63] Also, not every single innovation is subject to a patent.[64] Besides, in innovation-driven sectors, applying for a patent means disclosing what the firm is working on. Some firms would rather rely on secrecy to avoid giving any lead to competitors. Finally, the fact that something is protected by a patent does not mean that it will become a product at the end of the R&D phases.

As much as patents could appear as a tool to calculate the number of innovations made by a firm, they can also be seen as an obstacle to innovation.[65] A patented product or technique

56 P. Ormosi, A. R. Bennato, S. Davies and F. Mariuzzo, "Feasibility study on the microeconomic impact of enforcement of competition policies on innovation", Final Report for the European Commission, 21 December 2017, available at: https://ec.europa.eu/competition/publications/reports/kd0417860enn.pdf, p. 29.

57 Commission decision of 1 February 2012, COMP/.6166, DEUTSCHE BÖRSE / NYSE EURONEXT; Judgment of the General Court of 9 March 2015, T-175/12, *Deutsche Börse AG v. Commission*.

58 Commission decision of 11 October 2007, COMP/M.4439, Ryanair /Aer Lingus.

59 P. I. Colomo, "Competition Law and Innovation: Where Do We Stand?", *Journal of European Competition Law & Practice*, vol. 9, n° 9, 2018, p. 561.

60 P. I. Colomo, "Merger control and innovation: are emerging concerns justified?", 8 March 2017, available at: https://chillingcompetition.com/2017/03/08/merger-control-and-innovation-are-emerging-concerns-justified/.

61 P. I. Colomo, "Restriction on Innovation in EU Competition Law", *op. cit.*, p. 9.

62 N. Jung and E. Sinclair, "Innovative theories of harm in merger control: plugging a perceived enforcement gap in anticipation of more far-reaching reforms?", *op. cit.*, p. 273.

63 M. Chadha, *Innovation Competition in EU Merger Control and its evolution in DOW/DuPont*, *op. cit.*, p. 9.

64 N. Jung and E. Sinclair, "Innovative theories of harm in merger control: plugging a perceived enforcement gap in anticipation of more far-reaching reforms?", *op. cit.*

65 About the strategy of abusing patenting which can constitute anti-competitive practice under 102 TFEU, see J. Drexl, "Anti-competitive stumbling stones on

will prevent other firms from developing a comparable one and may discourage rivals to enter in similar R&D.[66]

### § 3. The measurement of the effects of the merger on innovation

Even if we focus on the long-term effect of the merger on the incentives and ability to innovate for the merging firms, it is hard to anticipate it. Jullien and Lefouili propose to anticipate those effects by combining four key consequences of a merger.[67]

The first and most important consequence is the innovation diversion effect which is generally detrimental to innovation. Irrespective of the firms' pricing strategies, when innovation allows a new rival to enter the market or a firm present on the market to improve its existing product, this entity will attract more consumers. The gain of customers for the firm which made the R&D efforts and a loss of demand suffered by its competitors are two sides of the same coin. It is called the "innovation diversion effect" or the "business-stealing effect".[68] The success of one firm will cannibalize the other firms' sales. In the same vein, a firm's decision to innovate depends on the probability of success and the profit this success could bring in comparison with the R&D cost. This is a simple cost-benefit calculation. However, if two firms merge into a single entity that continues to sell the two different products, the loss of demand for the second product is suffered by the same entity than the one gaining demand for the innovative product. This internalisation of the negative externalities consisting of sales diversion will decrease the incentive to innovate for the merged firm.[69] When innovation brings vertical differentiation, i.e. improves an existing product (incremental innovation), the sales externalities are negative and so is the diversion effect. This effect could be mitigated if the improvement of quality comes with an increase in price which may discourage consumer to shift to this product and lessen the sale diversion.

On the other hand, if at some point innovation leads to a new product departing from the existing line of products, it will have its own demand and separated market and will not affect the former rival's sales. Horizontal differentiation prevents the diversion of the rival's sales whose situation will actually improve because the product would have exited their market. It means less competitive pressure and more demand for the remaining firms. In this situation, the externalities are positive and spur innovation.

The second consequence is the demand expansion effect. The reduction of the number of competitors on the market means that the remaining ones will make a higher margin.

The third consequence is the margin expansion effect. The value of innovation is proportionate to the output that can benefit from it. Generally, mergers reduce the output and firms have less incentive to invest in margin-enhancing innovation.

the way to a cleaner world: Protecting competition in innovation without a market", *op. cit.*, p. 32.

66 N. Jung and E. Sinclair, "Innovative theories of harm in merger control: plugging a perceived enforcement gap in anticipation of more far-reaching reforms?", *op. cit.*

67 *Ibid.*, pp. 11-19; M. Bourreau, B. Jullien and Y. Lefouili, "Mergers and Demand-Enhancing Innovation", Toulouse School of Economics Working Papers, n° 18-907, 2019, pp. 5-11.

68 G. Federico, F. Scott Morton and C. Shapiro, *Antitrust and Innovation: Welcoming and Protecting Disruption*, *op. cit.*, p. 3.

69 G. Federico, "Horizontal Mergers, Innovation and the Competitive Process", *SSRN Electronic Journal*, 2017, available at: https://www.researchgate.net/publication/320656971_Horizontal_Mergers_Innovation_and_the_Competitive_Process, p. 8.

The last consequence is the per-unit return to innovation effect, also called "interaction term". It refers to the relative impact of innovation for each unit of output.

It results from the above that one factor cannot in itself predict the outcome of the merger regarding innovation because all factors have opposed effects that mitigate one another. Julien and Lefouili prescribe a combination of all four when measuring the effects of a merger on innovation.

*b. Standard of proof*

The quantity and quality of evidence required for the Commission to reach a decision[70] seems paradoxical with the prospective and counterfactual exercise that the Commission must engage in. All things considered, a strong legal standard of proof is necessary to prevent "arbitrary decision"[71] and prevent a *prima facie* finding which cannot realistically be refuted by the existence of efficiencies.

*c. Defence: efficiencies able to save the merger from prohibition*

In the EU, the burden of proving the efficiencies rests on the parties which must demonstrate that those efficiencies are verifiable, merger-specific and passed-on to consumers.[72] Of course, the mere fact that concentration does not necessarily lead to less innovation is not enough.[73-74]

The unilateral effect on innovation standard fails to take into account the efficiencies as the real countervailing effect they constitute because it only focuses on how the merger is detrimental to innovation. The Commission underestimates the weight of the efficiencies by using them as a counterargument only after it found that the merger was likely to be anti-competitive.[75] What should be done instead is an in-depth analysis of the efficiencies from the outset and based on the merger in question. Efficiencies should intervene in the core control of the Commission and not only as a defence.

§ 1. Spillovers and sharing

Some economic models assume that the innovation by a firm can only apply to the same firm's products. In reality, the same innovation can, most of the time, benefit other firms' products. Because the innovation can be non-rival and not product-specific, companies need to protect it via intellectual property or secrecy[76] to avoid that competitors take advantage of their R&D efforts.

Licencing is an example of voluntary spillover but there are also unintended spillovers. It occurs when the firm has no choice but to

70 M. Todino, G. van de Walle and L. Stoican, "EU Merger Control and Harm to Innovation–A Long Walk to Freedom (from the Chains of Causation)", *op. cit.*, p. 15.

71 P. I. Colomo, "Restriction on Innovation in EU Competition Law", *op. cit.*, p. 24.

72 C. Esteva Mosso, "Innovation in EU Merger Control", Antitrust Law Spring Meeting, Washington, 12 April 2018, available at: https://ec.europa.eu/competition/speeches/text/sp2018_05_en.pdf, p. 13.

73 P. I. Colomo, "Restriction on Innovation in EU Competition Law", *op. cit.*, p. 11.

74 Commission decision of 23 November 2011, COMP/M.6203, Western Digital Irland/Viviti Technologies, §§ 1004-1007.

75 Horiz. Merg. Guidelines, §§ 76-88; Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (Non-Horiz. Merg. Guidelines), *O.J.*, C. 265, 18 October 2008, § 53.

76 V. Denicolo and M. Polo, "The innovation theory of harm: An appraisal", *op. cit.*, pp. 3-4.

disclose information.[77] For the firms suffering from those leaks, the spillovers are negatives externalities. Knowing that their R&D efforts will serve their rivals, they may be tempted to reduce their investments in innovation. A merger eliminates the involuntary spillovers between the merging firms. Freeride will become sharing. The innovation of each merging firm can be boosted by the technologies, expertise, and knowledge of the other.

### § 2. Coordination

The merger between two innovators can avoid wasted efforts by introducing some coordination between their research programs. Sometimes, companies compete on their R&D efforts to make the same discoveries. The discovery has a fixed value. If the two firms both find it, the demand for the innovation will be split between them. It is an externality that the firms will internalise by reducing their investment because they expect less profit from the discovery. However, Denicolo and Polo demonstrated that concentrating the investment in only one research unit decreases the waste coming from duplication and increases the probability of success. It may actually be optimal to shut down one division and redirect the R&D efforts on the remaining ones.[78]

### § 3. Complementarities of R&D assets

The different resources needed for innovation, namely material (data, expertise, tools), financial (capital) and legal assets (patent), could be owned by separate entities. The merger is a way to aggregate resources and speed up the development of new innovations.[79] A coordinated strategy enables the best experts to work together on the most promising research.[80]

The efficiencies coming from the coordination of merging entities have been recognized in Tomtom/Teleatlas.[81] Complementarity of assets allows for synergies, common decision-making process, economies of scale, and cost reduction. Efficiency gains improve the effectivity of innovation and can potentially outweigh the negative effect of the merger.[82]

## II. INNOVATION IN THE DIGITAL SECTOR

This broad debate on mergers, innovation and competition highly interests the digital economy. There is no doubt that high-tech markets are driven by innovation. For those firms, "continuous innovation is the name of the game as competition in innovation drives the outcomes in growth, welfare changes and survival".[83] No doubt that innovation plays a big part in the evolution of the digital market, it also holds true for other innovation-driven markets. What makes the digital sector so unique is the two opposite features that characterize it. On the one hand, digital markets are highly concentrated. It has to do with the fact that numeric services are subject to network effects. The value of the service increases with the number of its users. It induces a tipping

77 B. Jullien and Y. Lefouili, "Horizontal Mergers and Innovation", Toulouse School of Economics Working Papers, n° 18-892, 2018, p. 21.

78 B. Jullien and Y. Lefouili, "Horizontal Mergers and Innovation", *op. cit.*, pp. 4-6.

79 N. Jung and E. Sinclair, "Innovative theories of harm in merger control: plugging a perceived enforcement gap in anticipation of more far-reaching reforms?", *op. cit.*, p. 274.

80 B. Jullien and Y. Lefouili, "Horizontal Mergers and Innovation", *op. cit.*, p. 24.

81 Commission decision of 14 May 2008, COMP/M.4854, TomTom/Tele Atlas, §§ 245-250.

82 G. Federico, G. Langus and T. Valletti, "Horizontal Mergers and Product Innovation", 2018, available at: https://www.researchgate.net/publication/318392882_Horizontal_Mergers_and_Product_Innovation, p. 12.

83 H.-W. Gottinger, "Innovation, Dynamics of Competition and Market Dynamics", *op. cit.*, p. 3.

effect. It means that in digital markets, competition happens *for* the market instead of *in* the market. On the other hand, "service providers have multiple routes available for delivering digital services to end-users, which can make the market contestable, meaning that market power can be challenged by entrants".[84] The concept of contestability goes back to the "Schumpeterian rivalry".[85] It implies that competition takes the form of a succession of temporary monopolies because market power is only transitory and ends up by the displacement of the dominant one day or the other. In the context of digital markets, network effects and switching costs create a lock-in effect that make it more difficult to displace the leaders. This explains the fundamental role of innovation.

"In the last decade, Amazon, Apple, Facebook, Google, and Microsoft combined have made over 400 acquisitions globally".[86] Competition law must have some regard to the behaviour of those tech giants. "In industries where developing the next generation product or process requires investments of hundreds of millions of dollars, innovation comes mostly from biggest firms".[87] This may be accurate in the pharmaceutical sector but in the digital, it is not the same. In a world where the leading social media worldwide is born in a young boy's garage, it is even more important to protect decentralised innovation from smaller actors.[88]

The digital sector needs a reliable merger control because the concentration of power is already exacerbated in that industry. But it also is the industry where the existing merger control static test is the least adapted to an environment in continuous renewal. The dynamics are quickly changing and fundamentally different from the ones we can observe in other sectors.

Hence, in the first chapter, we will analyse the features of digital markets that challenge the traditional merger control. In the second chapter, we will consider the effects that mergers can have on innovation in the digital environment. To remedy the difficulties caused by the features of the digital sector, some authors advocate for the adoption of new rules whereas others defend that adapting the interpretation given to the existing rules is sufficient. In the third and fourth chapter, we will try to give a concrete adaptation of the merger control to better comprehend innovation in digital mergers.

## Chapter 1. Inadequacy of the current merger control

### *1. Particularities of the digital industry*

#### *a. Features of the digital sector*

§ 1. Network effects

The digital sector is a competitive environment in which direct and indirect network effects play a major role. The direct network effect relates to the fact that the more people use the product, the more attractive and valuable the product is for consumers. The indirect network effect on the other hand typi-

84 N. Van Gorp and O. Batura, "Challenges for Competition Policy in a Digitalised Economy", Study for the European Parliament, IP/A/ECON/2014-12, 2015, p. 17.

85 J. Farrell and M. L. Katz, "Competition or predation? Schumpeterian Rivalry in Network Markets", UC Berkley Competition Policy Center Working Paper, n° CPC01-23, August 2001, p. 3.

86 J. Furman, Unlocking digital competition: Report of the Digital Competition Expert Panel, March 2019, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf, p. 91.

87 G. Federico, F. Scott Morton and C. Shapiro, *Antitrust and Innovation: Welcoming and Protecting Disruption*, *op. cit.*, p. 2.

88 T. Wu, "Taking innovation seriously: antitrust enforcement if innovation mattered most", *Antitrust Law Journal*, vol. 78, n° 2, 2012, p. 316.

cally occurs in multisided platforms where the increase of users on one side of the platform boosts the value that a distinct group of actors places on joining that same platform.[89] This is the business model followed by social networks, funded by the advertisement side. "Network effects may be physical, as the wide membership base of a social network, or virtual, as with complementary products such as between platforms and software".[90] Thanks to those network effects, concentration is somehow beneficial for the consumer. If the platform has market power, it means that it has a large userbase and that it is valuable for users to be on the platform. Nevertheless, if we look at the bigger picture, we easily find the negative effects of this concentration. Even if the service provided by the platform is free of charge, the monopoly price will be imposed to consumers in data, which is the real currency in the digital environment. Besides, network effects also induce a lock-in effect and barriers to entry. In addition to switching cost, brand effect and the inertia of consumers, network effects make it harder for other platforms to compete because they do not profit from the same competitive advantage. This is called the "incumbency advantage" or "excess inertia" meaning "that an installed base of consumers may prevent entrants from penetrating the market despite the latter being endowed with better quality products".[91] Network effects can raise the barriers to entry to a point where it has a foreclosing effect because it prevents competitors to enter the market. Only low or nil switching costs and multihoming can mitigate the network effects. Indeed, multihoming allows users to be on several platforms at the same time and "try out new services before quitting the old ones".[92]

Network effects come from the very nature of digital markets and the large economies of scale and scope achievable. Network effects increase the concentration of digital markets but are not considered by the merger controller. "A common characteristic of digital content is that it can often be duplicated and distributed at little or no cost".[93] The cost of offering the service to one additional user is negligible while the advantage of increasing the number of customers is multiplied by network effects. We can also add the economies of scope because large ecosystems allow for synergies and cooperation within the ecosystem. The integration in the ecosystem is the reason why digital markets are webs of conglomerate linkages within a defined ecosystem.

In the digital world characterized by the strong presence of network effects, the merger may be the trigger for the company to acquire sufficient market power for the merging entity to obtain an established dominant position. These same network effects can then create a barrier to entry protecting the dominant firm from any new entry. For this reason, the Commission's merger control must take network effects into account.[94]

89 E. Calvano and M. Polo, "Market Power, Competition and Innovation in Digital Markets: A Survey", *Information Economics and Policy*, 2019, p. 4.

90 M. Giannino, *The appraisal of mergers in high technology markets under the EU merger control Regulation: From Microsoft/Skype to Facebook/WhatsApp*, 2015, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2548560, p. 2.

91 E. Argentesi, P. Buccirossi, E. Calvano, T. Duso, A. Marrazzo and S. Nava, "Merger Policy in Digital Markets: An Ec-Post Assessment", Deutsches Institut fur Wirtschaftsforschung Discussion Paper, 2019, p. 4.

92 E. Calvano and M. Polo, "Market Power, Competition and Innovation in Digital Markets: A Survey", *op. cit.*, p. 8.

93 N. Van Gorp and O. Batura, "Challenges for Competition Policy in a Digitalised Economy", *op. cit.*, p. 18.

94 A. R. Martín-Laborda, "The relevance of network effects in the merger control of online platforms", *Market and Competition Law Review*, vol. 2, 18 July 2017, available at: https://ec.europa.eu/competition/informa-

§ 2. No price competition

"Online business models depend on attracting the attention of end-users. As such, they compete with each other for an audience. More specifically, they compete for the personal data obtained from the audience. The market for consumers' attention is highly competitive as consumers find alternative content (legal or illegal) with one click".[95] Digital actors try to catch customers' attention. The most widely adopted method is the "free of charge for the consumer" model. It proves that the price in money is not what matters anymore, at least from the consumer side of such platforms. In reality, the ultimate goal is to attract a large number of users through a zero-price policy. "Attention brokers" are thirsty for data. After that, the firm can either directly sell the user's data to advertisers or use the data to improve its product and keep its customers. The starting point of the value chain in digital markets is data, and not money. The traditional approach using the SSNIP test based on money losses its relevance when the service is offered at a zero price. The money price is no longer a determinant of the company's strategy and therefore cannot be the basis for identifying the relevant market as it is today.

§ 3. Uncertainty

As explained above, digital markets are always evolving and present a high level of innovation. It has to do with the fact that technologies improve fast and that limited assets are required to propose or improve a product on the digital market. Anyone possessing risky capital, data, computer power, and skills can enter the race for innovation and potentially defy powerful firms.[96] Innovation can challenge the established balance of powers and reshuffle the cards.

Digital markets are also unpredictable. They depart from a vertical approach consisting of a straight line starting from the development stage toward an existing product market. Instead, they drift away from a foreseeable outcome due to innovation interfering and creating new products and new markets. This "vertical disintegration increasingly becomes a feature of the modern economy".[97]

However, the digital sector is in a perpetual transformation. Any prospective analysis, which aims at anticipating the effects of a merger, is very delicate. The effects of a merger in the medium or long term are very difficult to predict for the European merger controller.

§ 4. Disruptive innovation

Disruptive innovation is neither new nor specific to digital markets. In the past, the cost of developing a disruptive innovation was high so the procurement of this product by consumers was correlatively expansive. Price was a barrier to the shift of all customers from the traditional to the disruptive product simply because not everyone could afford it. What makes disruptive innovation so important in the digital environment is that disruption is possible at a lower cost.[98] The more recent examples are Airbnb, Uber, WhatsApp, Netflix…

tion/digitisation_2018/contributions/antonio_robles_martin_laborda.pdf.

95 N. Van Gorp and O. Batura, "Challenges for Competition Policy in a Digitalised Economy", *op. cit.*, pp. 22-23.

96 M. Bourreau and A. de Streel, "Big tech acquisitions: competition & innovation effects and EU merger control", CERRE issue Paper, 2020, p. 5.

97 J. Drexl, "Anti-competitive stumbling stones on the way to a cleaner world: Protecting competition in innovation without a market", *op. cit.*, p. 9.

98 A. de Streel and P. Larouche, "Disruptive Innovation and Competition Policy Enforcement", OECD DAF/COMP/GF(2015)7, 2015, p. 3.

To qualify an innovation as disruptive, the size of the leap the innovation represents is irrelevant. Breakthrough innovations are not necessarily disruptive. Disruptive innovation is a manner of penetrating the value network. The disruptive product or service will appeal to consumers for its additional value. At that stage, clients do not see the product as a substitution for the product of the value network. This is why companies established in the value market do not feel threatened at first sight. But at some point, the disruptor will unexpectedly set a foothold into the value network.[99] The disruptive innovation is hard to spot.[100] On the bright side, it means that it is harder for established firms to obstruct its emergence.

Disruptive innovation "introduces a different package of attributes from the one that customers historically value. However, those attributes may not all surpass those the traditional product has but adds values enough of the old features that consumers still need and draw attention to them".[101] Being in-between markets will give the disruptor the possibility to evolve on the low key, on the blind side of the established actors. The consumer-base of the value network will be progressively attracted by the disruptive product. That displacement of customers will make the disruption the new value network in which the disruptor has the central role.

The very principle of disruptive innovation resembles Schumpeter's "creative destruction", defined as "the incessant endogenous mutation of the economic structure through the destruction of the old, established behaviour and plans, and the creation of new ones by entrepreneurs".[102] Disruptive innovation is a major way to dethrone the dominant firm and disturb the *status quo*. As soon as it increases the contestability of markets, competition authorities have a special responsibility to make sure that mergers are not used to stand in the way of the disruptors. Disruptive innovations can be endangered by firms wishing to dismiss the threat they constitute.[103] Those firms can indulge in exclusionary strategies to prevent the disruptor from entering the market by closing access to the value network. One way to do that is by preventing the interoperability between the disrupting product and the value network. Another manner is to block the development of the innovation with intellectual property obstacles.[104]

What is more of interest for this paper is that firms can attempt to acquire the disruptor. The protection of one's power is a reason for absorbing a potential future rival. It can constitute a killer acquisition if the acquirer plans to

99 C. M. Christensen, M. E. Raynor and R. McDonald, "What Is Disruptive Innovation?", *Harvard Business Review*, December 2015, available at: https://hbr.org/2015/12/what-is-disruptive-innovation.

100 J. L. Bower and C. M. Christensen, "Disruptive Technologies: Catching the Wave", *Harvard Business Review*, January-February 1995, available at: https://hbr.org/1995/01/disruptive-technologies-catching-the-wave. In this article, Christensen proposes a method to spot the disruptive innovation.

101 H.-F. Wei, "Does Disruptive Innovation 'Disrupt' Competition Law Enforcement? The Review and Reflection", 2016, available at: https://www.ftc.gov.tw/upload/636d4e6f-2570-4b26-b746-d0904c18e2db.pdf, p. 5.

102 F. E. Langrood, "Schumpeter's theory of economic development: A study of the Creative Destruction and entrepreneurship effects on the economic growth", 2017, available at: https://www.researchgate.net/publication/324918904_Schumpeter's_Theory_of_Economic_Development_A_Study_of_the_Creative_Destruction_and_Entrepreneurship_Effects_on_the_Economic_Growth, p. 2.

103 T. Schrepel, "Chapitre 2 – L'innovation de rupture: de nouveaux défis pour le droit de la concurrence", *L'innovation prédatrice en droit de la concurrence*, Bruxelles, Bruylant, 2018, pp. 108- 113.

104 H.-F. Wei, "Does Disruptive Innovation 'Disrupt' Competition Law Enforcement? The Review and Reflection", *op. cit.*, p. 16.

shut down the innovation after it bought. It can also decide to internalise the innovation so that an actor coming from the outside will not use it to become a rival.[105] In addition to the fact that the current merger control only has regard for the immediate consequences of the merger and does not care about the long-term effects, even the short-term ones are very hard to anticipate when it comes to start-ups. The amount of data available does not allow the Commission to know how the start-ups could have developed without any acquisition. This errs on the side of non-intervention.[106] We do not support this approach. In our opinion, if innovation is the most promising way to challenge the firms with market power and that those incumbents are able to impede the emergence of innovation, solely relying on the market forces to naturally regulate the market and optimise the consumer welfare is unrealistic. This is when competition law should step in to protect the process of innovation.[107] Competition law must ensure a level playing field in which new players can enter markets without facing unnecessarily high barriers to entry and fearing to be absorbed by big-tech giants.[108]

### *2. The threshold*

As we know, merger control is an ex-ante process. It is fundamental to have an upstream control, especially in a sector characterized by a tipping effect.[109] Even though the anticipatory nature of merger control is particularly adapted for the numeric environment, there is an enforcement gap in the Commission's jurisdiction concerning the control of mergers in this sector.

The Commission's jurisdiction is triggered when the turnover of the merging firms reaches a certain threshold[110] to make sure that the Commission only assesses mergers with a community dimension. The acquisition of WhatsApp by Facebook[111] is the most striking example of the loophole that digital mergers can use to escape the Commission' scrutiny. The merger fell within the competence of the

105 A. de Streel and P. Larouche, "Disruptive Innovation and Competition Policy Enforcement", *op. cit.*, pp. 4-9.

106 Supported by the Chicago school arguing that market forces are sufficient to regulate markets.

107 H.-F. Wei, "Does Disruptive Innovation 'Disrupt' Competition Law Enforcement? The Review and Reflection", *op. cit.*, p. 8.

108 K. A. Bryan and E. Hovenkamp, "Startup Acquisitions, Error Costs, and Antitrust Policy", *The University of Chicago Law Review*, vol. 87, n° 2, 2020, p. 332.

109 N. Jung and E. Sinclair, "Innovative theories of harm in merger control: plugging a perceived enforcement gap in anticipation of more far-reaching reforms?", *op. cit.*, p. 267.

110 EC Merger Reg., art. 1.2: "A concentration has a Community dimension where: (a) the combined aggregate worldwide turnover of all the undertakings concerned is more than EUR 5000 million; and (b) the aggregate Community-wide turnover of each of at least two of the undertakings concerned is more than EUR 250 million, unless each of the undertakings concerned achieves more than two-thirds of its aggregate Community-wide turnover within one and the same Member State".

111 Commission decision of 3rd October 2014, Case M.7217, Facebook/WhatsApp, §§ 9-12. Facebook's takeover of WhatsApp was initially agreed upon for $19 billion. However, between the proposal and the completion of the deal, Facebook's share value had increased, adding $2.8 billion to the total transaction amount.
In the end, Facebook acquired WhatsApp for a staggering $21.8 billion. P. Macinský, "Facebook acquisition of WhatsApp (case study)", 13 March 2015, available at: https://www.linkedin.com/pulse/facebook-acquisition-whatsapp-case-study-peter-kovac/.
At first, this amount was considered disproportionate to the turnover of WhatsApp at the time of its acquisition, which was about 10 million euros. In reality, this amount reflects the growth expected by Facebook's leaders through this acquisition. For more information about the acquisition of WhatsApp by Facebook, see E. Ocello, C. Sjödin and A. Subočs, "What's Up with Merger Control in the Digital Sector? Lessons from the Facebook/WhatsApp EU merger case", *Competition merger brief*, 1/2015, February 2015, Article 1, pp. 1-7, available at: https://ec.europa.eu/competition/publications/cmb/2015/cmb2015_001_en.pdf.

national competition authorities that exerted their referral power.[112] In the absence of that mechanism, national authorities could take inconsistent decisions. Without any harmonization in the decisions and potentially divergent remedies imposed by each national authority to the same firm, it creates a superposition effect. It is impossible for the firm to comply with contradictory obligations. This excessive burden makes the merger simply unrealistic.

Digital companies often voluntarily present low turnover at the beginning of their activities. They prefer to forgo revenues in order to increase the consumer base to create network effects and collect data in the first place.[113] It leads to no revenues and low market shares.[114] In the digital industry, it is frequent for firms to choose a "zero pricing" tactic. The goal is to appeal to the most users and collect more data.[115] If the buyout happens at an early stage of the firm's life, the dataset, and the prospect of growth and profit is not yet translated into revenues. The turnover does not reflect the real value of the transaction.[116] If the merger escapes the scrutiny, it does not mean that it will not jeopardise competition or that it does not have a hidden pre-emptive motive to avoid the emergence of the acquired firm as a rival.

Some people are not convinced of the need for a modification of the threshold regime. Their main argument is that until today, no significant operation really escaped the scrutiny of the competition authority.[117] However, as soon as a merger may present a risk with a Community dimension for competition, it should fall within the jurisdiction of the Commission. A transaction involving firms as powerful as Facebook whose strategy has worldwide implications cannot be at the mercy of the Member States goodwill.

The mainstream proposition is to add a transaction-based alternative threshold which would capture the transactions with a price differential between the turnover and the transaction value. This is applied by Germany[118] and Austria[119] since 2017.[120] The experts in charge of the Competition policy for the digital area report are in favour of this experimentation made at the Member State level. Only then, we could see if it is a good solution and extend this new threshold at the EU level.[121] In the

112 EC Merger Reg., art. 4(5).

113 C. Burholt, A. Traugott, F. Carlin and J. Hobson, "New Value-based Filing Thresholds in European Merger Control Regimes – Implications for Healthcare and Life Sciences Companies", *Global compliance news*, 1 November 2017, available at: https://globalcompliancenews.com/new-value-based-filing-thresholds-in-european-merger-control-regimes-20171101/.

114 A. de Streel and N. Petit, "Les défis des technologies numériques pour la politique de concurrence", *Les enjeux de l'innovation : quelles politiques ? quelle gouvernance ?*, Actes du 22e Congrès des économistes, Charleroi, 2017, pp. 111-112. The author proposes to evaluate the power of the firm with other factors such as the permanence of a firm, R&D expenditures, and its conglomerate ecosystem.

115 J.-U. Franck and M. Peitz, "Market definition and market power in the platform economy", CERRE report, 2019, p. 48.

116 J. Cremer, Y.-A. Montjoye and H. Scheweitzer, "Competition Policy for the digital era", 2019, European Commission, available at: https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf, p. 115.

117 X., "Response to the European Commission's evaluation of procedural and jurisdictional aspects of EU merger control", *European Competition Lawyers Forum*, 20 December 2016, available at: https://ec.europa.eu/competition/consultations/2016_merger_control/european_competition_lawyers_forum_contribution_en.pdf, p. 10.

118 Section 35(1a) of the German Competition Act.

119 Section 9(4) of the Austrian Competition Act (Kartellgesetz).

120 A. Tzanaki and J. Delgado, "New merger control guidelines for transaction value thresholds in Austria and Germany", *Competition Policy International*, 26 July 2018, available at: https://www.competitionpolicyinternational.com/new-merger-control-guidelines-for-transaction-value-thresholds-in-austria-and-germany/.

121 J. Cremer, Y.-A. Montjoye and H. Scheweitzer, "Competition Policy for the digital era", *op. cit.*, pp. 50-51.

meantime, voices arose against this threshold because of the difficulty to fix the transaction value and to verify that the merging firms do not manipulate the numbers.[122]

A completely different approach by which the national competition authorities would have the mission to identify the entities having "strategic market status" was proposed. Those firms would have an obligation to notify the competition authorities when they plan to be involved in mergers.[123]

Anyway, the solution will have to balance the need to capture significant transactions with the risk to overwhelm the Commission which has limited resources. What about an additional threshold which disregards money? We keep on repeating that digital markets are not about money or market shares but rather about users and data. Would it be more coherent to rely on a threshold based on the number of users? This proposition does not come out of the blue and was proposed by some authors[124] but surprisingly, none of them gave further thoughts about it. However, as data is the new valuable asset in the digital area, we suppose that when the transaction value does not match the turnover of the firm, it is mainly because the transaction value takes into account the data available and user base within the target firm. For that reason, the additional transaction threshold proposed above seems satisfying as it captures the risk of pre-emptive acquisition to acquire the potential disruptor and killer acquisition even if the targeted firm is at an early stage of its development. Indeed, if a company is ready to pay huge sums to acquire a company with a low turnover in order to prevent it from evolving, this merger will be submitted to the control of the commission. At this moment, the Commission will be able to assess the effect of the merger on competition.

## Chapter 2. The reasons and the effects of mergers in the digital sector

As explained in detail above, the effects of concentration on competition and innovation are ambiguous. The same applies in the digital environment when an established firm acquires another. The situation that is of greatest concern for innovation is when the targeted firm is a small but innovative firm. This acquisition may be part of a defensive or offensive strategy. Either way, concentration has conflicting effects on innovation.

### *1. The reasons behind the merger*

#### *a. Defensive acquisition*

"While price fixing has been described as the supreme evil of the antitrust law, from the perspective of innovation promotion, exclusion is the real supreme evil".[125] When a firm has a dominant position, it can be tempting to acquire entities that may enter the market and become rivals (although the task of identifying these entities can be arduous, especially with disruptive innovation, *cfr supra*). The intensity of the threat depends on the closeness of the targeted firm's product, its social graph, user-base growth, etc. What the incumbent will do, is a balance of costs. Is it more profitable to acquire the other entity and maintain dominance or is it too expensive so that the firm will rather take the risk of letting it enter the market? This calculation depends on the posi-

122 D. Myles, "Does Europe need value-based antitrust review?", *International Financial Law Review*, 12 April 2016, available at: https://www.iflr.com/Article/3545064/Does-Europe-need-value-based-antitrust-review.html.

123 M. Bourreau and A. de Streel, "Big tech acquisitions: competition & innovation effects and EU merger control", *op. cit.*, p. 15.

124 A. Gautier and J. Lamesch, "Mergers in the Digital Economy", CESifo Working Paper, n° 8050, 2020, p. 5.

125 T. Wu, "Taking innovation seriously: antitrust enforcement if innovation mattered most", *op. cit.*, p. 316.

tion of the firms on the market, the closeness of their offers, and the probability of the new rival's entry. First, the established firm must have some market power for its position to be worth being protected.[126] Secondly, the potential market power that the new entrant could take from the established firm also weights in the balance. It will depend on how close the offer of the new entrant and of the incumbent firm are and the degree of substitution between their respective products or services. Then, the cost-benefit analysis is necessary only if the entrant is viable, when it actually has the resources to commercialise its product.[127] Finally, even if the combination of those elements does not convince the acquiring entity to take over the other, the risk of the target being bought by a rival might.[128]

This led to the acknowledgment of the existence of a "kill zone where start-up cannot flourish, that is, a range of products or services where incumbent digital players are likely to dominate, either by acquiring their potential rivals or by reacting aggressively to entry by launching competing products or service".[129] If a start-up wants to enter the market and develop its innovation on its own, it should avoid that zone.

The targeted firm will also calculate if it is better for them to be acquired or to stay independent. It will depend on the takeover price and on the expected success of the firm on its own.

This approach is qualified as defensive because the acquisition is a way to preserve the acquirer's market power and get rid of future rivals before they even become serious competitors.

*b. Offensive acquisition*

Offensive acquisition is when the firm is actively trying to improve itself by improving or expanding its goods and services offerings.

Start-up activities are not all intended to lead to a new end-product but can also be an input for other firms' products. Instead of buying the resources from this firm, the acquirer can prefer buying the firm. In that scenario, the targeted firm is an input in the acquiring firm's production. As the activities of both firms are complementary, the merger provides to the acquirer the ownership of one more step of the supply chain. The merger is vertical and brings more efficiency as it secures necessary inputs. It also locks in the terms and conditions of the supply.[130]

The acquisition may also be a substitute for in-house innovation or a way to obtain intellectual property, technological know-how, or even qualified workforce.[131-132]

Sometimes, the border between offensive and defensive acquisition is blurred. If, for example, the start-up develops a new product or service, the established firm can buy it to integrate this product or service in its own ecosystem. Either the acquiring firms aims at killing the start-up, or it only wants to offer more products or services to its customers and reinforce its core business. Most probably, the product will

126 K. A. Bryan and E. Hovenkamp, "Startup Acquisitions, Error Costs, and Antitrust Policy", *op. cit.*, pp. 352-353.

127 T. Wu, "Taking innovation seriously: antitrust enforcement if innovation mattered most", *op. cit.*, p. 318.

128 E. Argentesi *et al.*, "Merger Policy in Digital Markets: An Ec-Post Assessment", *op. cit.*, p. 2.

129 M. Bourreau and A. de Streel, "Digital Conglomerate and EU Competition Policy", Working Paper, 2019, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3350512, p. 19.

130 M. Bourreau and A. de Streel, "Big tech acquisitions: competition & innovation effects and EU merger control", *op. cit.*, pp. 8-9.

131 Called acqui-hire by D. Kim, see D. Kim, "Predictable Exodus: Startup acquisition and employee departures", SSRN working paper, 2018, pp. 6-7.

132 A. Gautier and J. Lamesch, "Mergers in the Digital Economy", *op. cit.*, p. 23.

cease to exist under its original brand and will be incorporated into the acquirer's portfolio.[133]

### *2. The effects on innovation*

The potential entry of a new actor on the market constitutes a threat for the already established firms. That threat is even more present in the digital area where disruptive innovation is frequent. In digital sectors where the competition happens for the entire market until the winner takes it all, it is hard to displace the firms with an entrenched position of dominance. The best way to do it is via innovation. The new entrant can bring the next best thing that will attract the value network to its side and capture the consumers. For that reason, the simple prospect of their entry constitutes competitive pressure on the incumbent firms. Those firms can react in one of two ways.

The first one is by making sure they continue to innovate to stay the leader on the market.[134] But the innovation made by firms that already obtained a position on the market is usually different from the one of the new entrants because they are subject to different constraints. Indeed, established firms are subject to customers' expectations of incremental innovation. Existing consumers expect the firm to follow the "performance trajectory". If the firm releases a new product in total breach with the existing one, it can be seen as not matching the immediate needs of the customers. Companies need to keep on satisfying their customers and this is sometimes made at the expense of new technologies that they choose to overlook. This is typically what happened to IBM which was the best placed for reaching Personal Computer innovation. Staying too close to consumer's expectations is a risk to miss the leadership in the next invention.[135] In other words, the established firms innovate to stay in the race.[136] The contestability of the market is beneficial for competition and innovation, but this innovation will usually be limited to incremental innovation whereas new entrants are more likely to engage in breakthrough innovation.

The other way that a firm can react is by acquiring the potential rival as we explained in the defensive approach above. At that stage, it is important to keep in mind that the prospect of a buyout is most of the time the ultimate motivation behind tech start-up activities and the reason why investors pour capital into them. In digital markets where the cost of entry is low, start-up can make an "entry for buyout". It is translated by the acquisition of start-up at a very early stage of their life.[137] When making decisions, the start-up may have taken this expected outcome into account and directed its conduct toward a greater appeal for the potential acquirer.[138] If the Commission prohibits too frequently these kinds of acquisitions, the prospect of being acquired disappears and at the same time, the incentives and

133 *Ibid.*, p. 3: A. Gautier and J. Lamesch carried out an empirical study where they identified each GAFAM's key segment. Then they matched the GAFAM's acquisition with the segment to see if the operation was used to strengthen their position on the segment or enter a new one. In the end, they came to the conclusion that firms generally use mergers to gain more power in the market segment where they are the most successful and do not use it to enter new markets to compete with the firms established on those markets.

134 M. Bourreau and A. de Streel, "Big tech acquisitions: competition & innovation effects and EU merger control", *op. cit.*, p. 9.

135 J. L. Bower and C. M. Christensen, "Disruptive Technologies: Catching the Wave", *op. cit.*

136 H.-W. Gottinger, "Innovation, Dynamics of Competition and Market Dynamics", *op. cit.*, p. 10.

137 For instance, 60% of Amazon, Facebook, and Google acquisitions were firms being less than 4 years old. E. Argentesi *et al.*, "Merger Policy in Digital Markets: An Ec-Post Assessment", *op. cit.*, p. 19.

138 A. Gautier and J. Lamesch, "Mergers in the Digital Economy", *op. cit.*, p. 6.

the ability – less venture capital if fewer investors – for start-up to innovate decreases.[139]

The fundamental question when the start-up merges with another undertaking is what will be the fate of innovation post-merger? The worst-case scenario is for the merger to be a killer acquisition. That is when the acquisition is made to prevent the new entrant from displacing the acquiring entity and that, after the merger, the latter shuts down the innovation efforts.[140]

When the R&D efforts of the merging entities overlap and when their respective offers are close substitutes, they will abort some innovative efforts to avoid the duplication effect, but they can also incorporate one firm's innovation efforts into the other's. That way, they expand the ecosystem or improve existing products. Furthermore, the acquiring firms typically have more resources (financial resources, assets, and talents). It makes it easier for the merged entity to develop the innovation than it would have been for the start-up alone.[141]

The digital sector is not different from any innovation-driven industries. Mergers can have either positive or negative effects. In addition to the general way to balance the four criteria from Julien and Lefouili to anticipate the effect of a merger, we should also take into account concerns specific to the digital sector. To address those concerns, the Commission should be able to have regard to the reasons and the existence of underlying pre-emptive motives behind the acquisition. The most detrimental acquisitions are generally the defensive killer acquisitions because the acquiring firm terminates the R&D efforts of the target.

## Chapter 3. Digital innovation theory of harm

The question is whether the innovation is sufficiently taken into account in the current merger control. It is a fact that innovation is one of the parameters in the trade-off between ante- and post-merger situations but is it enough? Is the innovative theory of harm from the Dow/DuPont merger adequate for the digital environment?

### *1. The innovative theory of harm applied to the digital industry*

*a. The product market*

The definition of a relevant market allows to identify the competitive constraints incurred by the firms active on that market. In the first part of this paper, we explained why this step is not adequate for innovation-driven sectors. We go further here by demonstrating how the delimitation of a specific market is even more problematic in the digital industry.

First of all, multi-sided platforms spill over different markets. Their activities are not limited to one specific market but impinge on several. The whole strategy of digital firms is to build an ecosystem based on synergies and interoperability between products in order to lock users in.[142] The ecosystem integrates diversified

139 M. Bourreau and A. de Streel, "Big tech acquisitions: competition & innovation effects and EU merger control", *op. cit.*, p. 9.

140 Some uncertainty seems to float around the notion of killer acquisition. Some authors define is as the acquisition of a potential competitor (pre-emptive buyout) while others insist that in order to be a killer acquisition, the acquirer has to shut down the R&D activities of the targeted firm. The latter seems more accurate.

141 M. Bourreau and A. de Streel, "Big tech acquisitions: competition & innovation effects and EU merger control", *op. cit.*, pp. 10-13.

142 Ecosystem integration is beneficial for both the supplier and the consumer. For the supplier, the ecosystem allows for economies of scope and scales (i.e. possibility to re-use some assets for the production of several products (data is typically such a sharable input)). For the consumer, the ecosystem allows for synergies, interoperability between the products. M. Bourreau and A. de Streel, "Digital Conglomerate and EU Competition Policy", *op. cit.*, pp. 7- 11.

products so an operation involving digital firms affects several product markets.[143] The fact that the Commission limits its control to one specific narrow product market, prevents it from considering the connections between markets. The narrowness of the control results in the ignorance of the potential horizontal nature of a merger and the interconnections between digital markets. Second of all, the scope of the market encompasses all products considered as substitutable by consumers. In order to define this substitutability criterion, the Commission uses the SSNIP test. In the end, the technique used by the Commission to fix the boundaries of the relevant market rests entirely on price considerations. When a platform opts for a "zero price" strategy there is simply no price observable in money and the whole method to delineate the market collapses. Finally, the delimitation of a relevant market assumes that this market is fixed in time and space whereas in reality, the boundaries between markets are blurred and continuously changing.[144]

*b. The competitive assessment*

The novel innovation theory of harm is composed of a two-step control. First, the question is whether the merging entity discontinue, delay, or reorient innovative efforts. Those are the short-term effects of the merger. Second, the Commission looks at the effects on future innovation in itself. The authority should be tougher on transactions likely to harm competition in the future by lessening potential competition in the present.[145] To better anticipate those effects in an uncertain environment such as the digital sector, we encourage to focus on three elements: the reasons behind the merger, the cost of the enforcement error, and the gathering of capabilities.

§ 1. The reasons behind the merger

To anticipate the effect of a merger, it is fundamental to know the rationale behind the takeover, often hidden by the firms. Therefore, the competition authority should rely on a business-based approach to learn about the firms' real intentions. Besides, it allows for a general view of the firms' whole acquisition strategy. In this context, "systematic is problematic". It means that a pattern in the undertaking's acquisition history can indicate that it uses mergers to protect its market power or that right after the merger, the acquiring firm is used to shut down the innovation efforts of the targeted firm. In the first situation, the innovation will not allow the start-up to compete with other firms. In the second situation, innovation will not even see the light of day. As it reduces the number of players on the field or consumer choices, those situations harm innovation but also consumer welfare.

§ 2. The error-cost

We already stressed that innovation-driven sectors are highly uncertain, especially in the digital industry. It is impossible to predict with absolute certainty the outcome of R&D efforts. Similarly, merger control is a counter-factual assessment. "However, neither is the optimal legal predictability an absolute value, nor is the predictive accuracy of a more dynamic antitrust analysis an absolute obstacle to a

143 *Ibid.*, p. 2: "For example, Amazon has expanded from the online sale of books to the sale of almost everything online, including payment services, cloud computing, as well as movie and television series production and distribution. Google has expanded from search to maps, operating systems, mobile and personal computing devices, and cloud services. Facebook has diversified into photo and video social networking with Instagram, messaging with WhatsApp, and virtual reality with Oculus VR".

144 N. Van Gorp and O. Batura, "Challenges for Competition Policy in a Digitalised Economy", *op. cit.*, pp. 52-55.

145 C. Shapiro, "Antitrust in a time of populism", *International Journal of Industrial Organization*, vol. 61, 2018, p. 739.

more innovation-friendly approach".[146] Given that uncertainty is inherent to digital mergers, mistakes are inevitable. Once we accept that, we can try to minimize errors or more importantly, their consequences.

When talking about enforcement mistakes, the doctrine identifies two types of errors. The first one is referred to as "false positive" or "type I error". It is when a merger that should have been allowed is prohibited. The second one, "false negative" or "type II" error is when an anti-competitive merger is cleared. Those are respectively overenforcement and underenforcement problems.[147]

For the moment, the Commission's standard of proof relies on probabilities. If it is more likely for the merger to have anti-competitive than pro-competitive effects, the merger should be prohibited or at least remedies should be imposed. In uncertain digital cases, it seems counter-intuitive to rely on probabilities. What is more convincing is to use the balance of harm, taking not only probability into account but also relying on the cost of the error.

A non-negligible part of the doctrine defends that overenforcement is the most detrimental to consumer welfare. According to those authors, the Commission interferes in something it has no comprehensive understanding of and may interrupt the cycles of innovation.[148] It makes no doubt that overenforcement has a certain cost. The prospect of intervention by competition authorities can be a deterrent to investing in innovation. Non-intervention can also encourage firms to innovate and enter the market to remedy the concentration of market power themselves. "In a world with rapid innovation, potential and actual entry may mitigate the social cost of concentration".[149] Market forces would naturally remedy this temporary concentration. Some authors go even further by proposing substantive legal rules providing a safe harbour. It would act as a filter for some conducts to automatically be subtracted from the Commission's scrutiny and simply avoid the risk of overenforcement.[150]

We disagree and take the side of those who defend the opposite view that type II errors, namely underenforcement, actually are the more detrimental in the digital environment. It should be recalled at that point that competition happens for the market and that it is hard to displace the established firm benefiting from network effects and switching costs. In that context, letting a firm get too much power by means of a merger is dangerous. The cost of underenforcement can be so heavy that it would be inconsiderate not to take it into account in the decision-making process. Anyway, we still maintain that the error cost test is the best way to make a decision under uncertain circumstances. In the absence of any consensus on what type of error is the most detrimental in the digital economy, a legal test based on the balance of harm combines the probability factor with the scale of harm that could result from the merger.[151] Furthermore, the error cost method is in accordance with the recommended effect-based approach when assessing the effect of a merger on competition.[152]

146 M. Laskowska, "Dynamic Efficiencies and Technological Progress in EC Merger Control", *op. cit.*, p. 71.

147 J. Furman, Unlocking digital competition: Report of the Digital Competition Expert Panel, *op. cit.*, p. 91.

148 H. A. Shelanski, "Information, Innovation, and Competition policy for the internet", *University of Pennsylvania Law Review*, vol. 161, 2013, pp. 1667-1669.

149 E. Calvano and M. Polo, "Market Power, Competition and Innovation in Digital Markets: A Survey", *op. cit.*, p. 1.

150 M. Jennejohn, "Innovation and the Institutional Design of Merger Control", *The Journal of Corporation Law*, vol. 41, n° 1, 2015, p. 104.

151 J. Furman, Unlocking digital competition: Report of the Digital Competition Expert Panel, *op. cit.*, pp. 6 and 14.

152 As opposed to the "form-based approach" where a type of conducts is considered (un)lawful in itself,

Lastly, after considering the best method to decide under uncertainty, we wonder whether, in fact, absolute certainty really is unachievable.

The only way to know the real effects that a merger would have had is to let that merger happen. It could make us want to consider giving the green light to the merger then revoking the authorisation if the merger turns out to be anti-competitive. We consider this approach to be neither appropriate nor feasible for three reasons. Firstly, this way of thinking goes against the ex-ante nature of merger control. Secondly, it is true that the Commission can order the merged entity to unmerge. This backup solution is only theoretically simple as it would require the merging firms to go back to the initial situation. As much as it can be feasible for restructured R&D divisions, it is not the case for human resources attached to those divisions.[153] Finally, all the reasons justifying that under-enforcement presents the greatest risks are reasons why it is not a good solution to count on post-merger reaction. However, one way to potentially alleviate the complexity of imposing to unmerge would be to anticipate this outcome. We could imagine that the Commission clears the merger but stipulates that if it turns out that it has anti-competitive effects, the Commission has the power to reconsider its initial decision. It would then be on the merging entity to design its merger keeping in mind the possibility of being obliged to unmerge. The difficulty of a potential separation in the future would be at the merging firms' own perils.[154] Although this is a possibility, it seems difficult to put into practice.

### Chapter 4. Focus on the input

The best way to face the challenge that the dynamic digital sector represents for competition law appears to be the introduction of an innovative theory of harm. Moreover, we should rely on the resources needed for innovation. "The notion of firm's capabilities seems crucial to the understanding of market dynamics driven by innovative activities".[155] This focus on the capabilities intervenes at the stage of the delineation of the relevant market as well as in the competitive assessment as a way to effectively protect the process of innovation.

It is precisely what has been used by the FTC in the Northrop merger. Making the relevant market the research, development, manufacture, and sale of the product, gave the FTC the possibility to consider all competitors irrespective of whether they were at an early stage of developing a product or whether they already had existing products on that market. In the competitive assessment, the FTC analysed if, post-merger, there would still be enough independent innovators left on the market. This is only possible if the authority focusses on the clustering of all the requisite inputs. We can also find a reference to the capabilities in Dow/DuPont when "the Commission looks at the loss of rivals with key innovation capabilities for competing in the future".[156] Finally, capabilities often appear at the remedy stage. When the Commission orders a divestiture, it has to delineate the divested R&D to ensure that it

irrespective of the situation *in concreto*. One example would be the safe harbour rule. J. Drexl, "Real knowledge is to know the extent of one's own ignorance: on the consumer harm approach in innovation-related competition cases", Max Planck Institute for Intellectual Property, Competition and Tax Law Research Paper, n° 09-15, 2009, p. 5.

153 M. L. Katz and H. A. Shelansky, "Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?", *op. cit.*, pp. 126-127.

154 In that case, we could imagine that the merging firms must submit a divestiture plan to the commission.

155 H.-W. Gottinger, "Innovation, Dynamics of Competition and Market Dynamics", *op. cit.*, p. 11.

156 N. Petit, "Innovation Competition, Unilateral Effects, and Merger Policy", *op. cit.*, p. 875.

does not deprive the remaining R&D activities of an essential asset and hinder innovation. In this last chapter, we will explain why capabilities should be an integral part of the innovative theory of harm.

### 1. *The focus on capabilities to establish a reliable innovation theory of harm*

*a. Origin*

The roots of this reasoning lie in the resource-based approach brought by Edith Penrose in 1959. In her writings, she contemplated the firm's competitive advantages by focusing on the factors of growth of a company. She came to the conclusion that firms are an ensemble of physical and human assets and that will define the extent of the possible growth of the firm. The optimal allocation of those resources will set the bar of the maximal efficiency that the firm can reach. A merger is a process to appropriate the acquired firm's capabilities and increase the potential of growth for the merged entity. Each firm is the addition of its resources and firms distinguish themselves by its valuable, rare, inimitable and non-substitutable resources.[157]

EU merger control in the digital industry should focus on the input instead of the output. The Commission should ask itself whether "the merged entity has the incentive and ability to significantly impede competition on those input markets".[158] The emphasis here is not on the firm's incentives to innovate anymore but on their ability to do so. It is possible in the digital industry because the resources needed to innovate are easily identified: computer power, talented engineers, data, and financial resources.[159]

The main objective of merger control is to prevent mergers that lead to the creation or strengthening of a dominant position. To do this, competition authorities must focus on potential competition rather than existing competition. Indeed, they must examine the effects of the merger on innovation capabilities. If a merger results in the combination of the only entities that have the necessary input to compete in that market, the merger raises serious competition concerns. On the other hand, if, despite the proposed merger, there are still many rivals that have all the resources necessary to compete with the merged entity, the merger appears benign.

The task of competition law would then be to ensure a level playing field for all firms to innovate, by ensuring that the merger does not create foreclosure or concentration of inputs.

It converges with Farrell's concept of "diversity". Innovation is the future solution to a future problem. The more actors are working on it, the more chance to find it. It is a simple try-error process[160] whereby "econodiversity" gives better chances to succeed.[161] The inverted-U relationship between concentration and innovation means that there is an optimal number of competing sources of innovation. This explains why some mergers are authorised

157 P. Soni, "The Theory of the Growth of the Firm (Edith Penrose, 1959)", IIMB conference Paper, 2015, available at: https://www.researchgate.net/publication/275339460_The_Theory_of_the_Growth_of_the_Firm_Edith_Penrose_1959.

158 M. Bourreau and A. de Streel, "Big tech acquisitions: competition & innovation effects and EU merger control", *op. cit.*, p. 17.

159 A. de Streel, "Titre 4 – Les données, l'innovation et le droit des concentrations", in E. Degrave *et al.*, *Law, Norms and Freedoms in Cyberspace / Droit, normes et libertés dans le cybermonde*, Bruxelles, Larcier, 2018, p. 115.

160 W. Kerber, "Competition, Innovation and Maintaining Diversity through Competition Law", in J. Drexl, W. Kerber and R. Podszun (eds), *Economic Approaches to Competition Law: Foundations and Limitations*, Edward Elgar, 2010, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1543725, p. 5.

161 J. Farrell, "Complexity, diversity and antitrust", *Antitrust bulletin*, vol. 51, 2006, pp. 165-173.

under the condition that one firm divests some asset.[162]

*b. The relevant market*

In a control based on the input for innovation, the relevant market would not be based on a product but on an ensemble of capabilities. The closeness of capabilities replaces substitutability. If the merging entities are the only ones to indulge in R&D and to own the necessary capabilities, it is certainly harmful for competition innovation to authorise the merger. It means that we use capabilities to identify who can be considered as a competitor. It requires first to agree on which are the "specialized resources"[163] necessary for a certain kind of innovation process and then on who has them. This way, we do not abandon the concept of a relevant market, but we change its definition. Doing so, we only change our point of view by focusing on the input market, the input being the resources identified beforehand. Competitors are all credible actors able to innovate in the sector[164] composing the "population of potential innovators".[165]

*c. The competitive assessment*

When assessing competition on the market, the Commission must verify if the concentration puts a specific resource in the hand of only one operator (typically if the two merging firms were the only two firms in possession of the resource). The latter would be the only one with the ability to innovate and would be able to foreclose that necessary input for other firms. One solution is to impose remedies ensuring that the capabilities stay available for several firms.[166]

Knowing where those resources are is to know where the "innovative clusters" are. Innovative clusters are places from where innovation can emerge. The capabilities are not the only factors affecting the ability to innovate. Innovation catalysts increase the probability of innovation. Two examples are platforms and standards. Platforms are "vital intermediaries"[167] enabling to address a large number of potential customers at very low costs. In the same vein, interoperability is a way for non-integrated firms to offer complementary or subsidiary products to the ones on the market. Both result in low barriers to entry. If competition law wants to protect innovation by ensuring a level playing field, it must ensure that instruments such as platforms and standards are not corrupted and used as exclusionary tools to create unsurmountable barriers to entry for new actors.[168]

Finally, the concentration of capabilities is not anti-competitive as such. As explained above, the combination of firms' capabilities can have positive effects. The complementarity between resources can create efficiencies. In addition to analysing the efficiencies together with the short-term and long-term effects of the merger, the Commission should pay attention to the efficiencies resulting from the sharing of R&D assets.

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162 G. Federico, F. Scott Morton and C. Shapiro, *Antitrust and Innovation: Welcoming and Protecting Disruption*, *op. cit.*, p. 17.

163 W. Kerber, "Competition, Innovation, and Competition Law: Dissecting the Interplay", *op. cit.*, p. 16.

164 M. L. Katz and H. A. Shelansky, "Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?", *op. cit.*, pp. 128-129.

165 R. J. Gilbert and S. C. Sunshine, "Incorporating Dynamic Efficiency Concern in Merger Analysis: The Use of innovation markets", *op. cit.*, p. 588.

166 W. Kerber, "Competition, Innovation, and Competition Law: Dissecting the Interplay", *op. cit.*, pp. 16-18.

167 L. M. Khan, "What makes tech platforms so powerful?", Chicago Booth: Stigler Center for the study of the Economy and the State, 5 April 2018, available at: https://promarket.org/2018/04/05/makes-tech-platforms-powerful/.

168 T. Wu, "Taking innovation seriously: antitrust enforcement if innovation mattered most", *op. cit.*, p. 321.

### *2. Focus on data as the critical capability*

The focus on capabilities is well-suited for the digital sector where specialized resources are easily identifiable. To be able to innovate, firms must have knowledge, skills, computer power, or machinery and intellectual property rights (patent or trademarks). In the era of Big Data, we can add data and data-linked skills such as data analysts, as critical resources to innovate in the high-tech industry. As the other resources are easily acquired, data will be determinant to distinguish firms' abilities to innovate.[169] Data can achieve several purposes. To begin with, data collection is a way for firms to better understand the consumer's needs and tastes and then improve their products accordingly. Data can also enable firms to better target customers and anticipate trends before they even happen.[170] "The task of many digital platforms is that of making predictions of various sort, the data used to make these predictions ('big data') is becoming extremely relevant to shaping competition dynamics in digital markets".[171] Secondly, they can use the data to maintain their market power. Once they have sufficient data, "digital platform operators place themselves in a gatekeeper position by using personal data to create synergies"[172] and retain users. Finally, Data allows firms to monetize services sold as free of charge for the consumer but paid by advertisers.

Companies do everything in their power to acquire data as it constitutes a considerable competitive advantage.[173] Today, the power of the GAFAM notably comes from the enormous quantity of data they possess.[174] The first big data merger presented to the Commission was the one between Google and DoubleClick. At this occasion, the Commission expressly stated the importance of data or combination of data.[175] It is much easier for firms active on internet to get users data than it is for conventional brick-and-mortar firms. In the digital sector, data also has its own feedback effect: big actors are able to get more data because they have more users, with more data they are able to make better predictions and preserve their dominance.[176]

One way of acquiring data is through mergers. For this reason, competition authority cannot overlook the consequence of a concentration of data by merger operation.

The Commission must assess if the data owned by the merging parties is not available for other

169 Competition law does not aim at preventing breaches to privacy law. Judgment of the Court of 23 November 2006, C-238/05, *Asnef-Equifax and Administración del Estado v. Asociación de Usuarios de Servicios Bancarios (Ausbanc)*, § 63. However, privacy law can be taken into account. For example, data protection law limits what a firm can do with its dataset. Commission decision of 6 September 2018, M.8788, Apple/Shazam, §§ 226 and 314.

170 I. Forrester, "Disruptive innovation and implications for competition policy", EUI Working Papers LAW 2018/14, 2018, p. 10.

171 E. Argentesi *et al.*, "Merger Policy in Digital Markets: An Ec-Post Assessment", *op. cit.*, p. 5.

172 N. Van Gorp and O. Batura, "Challenges for Competition Policy in a Digitalised Economy", *op. cit.*, p. 26.

173 M. E. Stucke and A. P. Grunes, *Big Data and Competition Policy*, Oxford, Oxford University Press, 2016, available at: https://www.researchgate.net/publication/308970973_Big_Data_and_Competition_Policy, p. 8.

174 G. Gürkaynak, "Taking the lead in antitrust enforcement: evaluating innovation and technology", 19th Annual Loyola Antitrust Colloquium, Institute for Consumer Antitrust Studies Loyola University Chicago, April 26, 2019, p. 17.

175 In the Microsoft/LinkedIn case, the combination of data was only a secondary concern while in Google/DoubleClick, the Commission looked into the potential foreclosure based on the combination of Google and DoubleClick's datasets. Commission decision of 6 December 2016, M.8124, Microsoft/LinkedIn, § 339; Commission decision of 11 March 2008, COMP/M.4731, Google/DoubleClick, § 359.

176 E. Calvano and M. Polo, "Market Power, Competition and Innovation in Digital Markets: A Survey", *op. cit.*, p. 15.

competitors through other channels.[177] Many authors underline the fact that most data are not rare and unduplicable.[178] However, sometimes it is not the individual data that is valuable for the firm but the dataset. "The creation of a larger or more diverse dataset resulting from a merger may give the merged entity a competitive advantage potentially capable of foreclosing rivals".[179] In addition, the strategies of firms are based on predictions made by algorithms. Those algorithms are fed and trained with data. The quality of the data collection, which depend on four factors (volume, veracity, variety, and velocity) will determine the accuracy of the predictions.[180] Even if the data is nonexclusive, non-ubiquitous and non-rivalrous, the accumulation of data may itself be a competitive advantage.[181-182]

In short, we propose an innovative theory of harm based on the clustering of specialized assets. Mergers can be used as a means to acquire resources needed for innovation. Among these resources, data is of predominant importance, given its multiple roles and the competitive advantage and economic power it can bring to digital firms. The volume and quality of the data acquired through the merger will be critical in delineating the innovation capabilities of the merged entity.

Therefore, when the Commission reviews a merger proposal, it must assess whether or not the data held by the merging parties will still be available to other competitors through other channels after the merger.

If it is not reasonably possible for rivals to obtain comparable data through other means, the Commission must ensure that the merger does not create an undue competitive advantage and potentially impose data-related remedies to clear the merger.[183]

For this reason, the Commission should pay particular attention to the accumulation of data among competitors. In practice, the Commission should ask whether the merged entity will have a pool of data unmatched by its competitors or whether the data is still accessible in some way to a potential rival.

## CONCLUSION

In the second part of this paper, we showed that the need for an innovation theory of harm adapted to dynamic markets is even more necessary in the digital industry. This novel theory of harm must assess the short- and long-time effects of the merger and take into account the fast pace of evolution and the high degree of uncertainty inherent to the numeric environment. Our proposal is to focus on the input necessary to innovate in the given industry.

177 Commission decision of 9 January 2014, M.7023, Publicis/Omnicom, §§ 625-630.

178 M. Dolmans and T. Pesh, "Should we disrupt antitrust law?", 2018, available at: https://www.clearygottlieb.com/-/media/files/should-we-disrupt-antitrust-law-pdf.pdf.

179 E. Argentesi *et al.*, "Merger Policy in Digital Markets: An Ec-Post Assessment", *op. cit.*, p. 11.

180 E. Calvano and M. Polo, "Market Power, Competition and Innovation in Digital Markets: A Survey", *op. cit.*

181 J. Hoffman and G. Johannsen, "EU-Merger Control & Big Data: On Data-specific Theories of Harm and Remedies", Max Planck Institute for Innovation and Competition Research Paper, n° 19-05, 2019, p. 6. The authors distinguish between absolute foreclosure when the data controller is the only one in a position to know a data because there is no other channel to procure that data and relative foreclosure when data is not rivalrous but the combination of data is an advantage that competitors cannot match.

182 Commission decision of 11 March 2008, COMP/M.4731, Google/DoubleClick, § 359.

183 About data remedies, see J. Hoffman and G. Johannsen, "EU-Merger Control & Big Data: On Data-specific Theories of Harm and Remedies", Max Planck Institute for Innovation and Competition Research Paper, n° 19-05, 2019.

First, the focus on the specialized resources should be used to delineate the relevant market and identify its players. Firms with overlapping R&D activities and the capabilities to innovate are credible innovators competing with each other.

Second, once we have identified the credible actors, the Commission should see if after the merger, there is still a sufficient number of independent innovators on the market. Competition law must also ensure that the market stays a level playing field for any firm and accessible for firms wishing to penetrate it. This is why the merger control must verify that mergers do not create excessive barriers to entry. It can take the form of a big competitive advantage for the merged entity. For example, the merger can grant exclusive control of an input and the ability to foreclose it to the merged firm. If this input is data, the barrier depends on whether the data is inimitable, rare, valuable, and non-substitutable.[184]

Whilst analysing the effect of the merger, the Commission must be careful of the rationale for the transaction and watch out for killer acquisitions or the neutralization of potential disruptors. The Commission should also use the balance of harm in its forward-looking investigation to decide under uncertainty.

Finally, the efficiencies cannot be relegated to a defence that firms must invoke after the Commission demonstrated how the merger would be anti-competitive. As they are able to swamp the *prima facie* negative effects of a merger, the efficiencies must be an integral part of the competitive assessment made by the Commission. The dynamic efficiencies stemming from innovation creates more consumer surplus than cost efficiencies do.[185]

All those suggestions are in line with the effect-based approach preached by the Commission. Given that a new theory of harm addressing the challenges that innovation represents for the current merger control is an absolute necessity, an assessment based on inputs appears to be the best solution. It does not mean that we need new legal rules. We share the view that competition law is flexible enough to adapt to those challenges[186] faced by competition authorities around the world.[187] The fact that the merger case law already evolved toward that new theory of harm without any substantial legal rule supporting it is a proof of that.

184 J. B. Barney, "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, vol. 17, n° 1, 1991, p. 99.

185 M. Bourreau and A. de Streel, "Digital Conglomerate and EU Competition Policy", *op. cit.*, p. 22.

186 A. de Streel, "Titre 4 – Les données, l'innovation et le droit des concentrations", *op. cit.*, p. 116.

187 C. Madero Villarejo, "Recent developments in Merger Control", European Law Workshop, Brussels, 14 January 2020, available at: https://ec.europa.eu/competition/speeches/text/sp2020_01_en.pdf, p. 9.