Efficiencies in Telecommunication Network Cooperations and Mergers

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Executive Summary

This report reviews the scope for efficiency arguments in agreements and mergers between telecommunication companies. It finds the current legal framework for assessing efficiencies capable of accommodating broader efficiency claims by the parties to a merger or in a cooperation agreement that are not recognised in current European Commission (EC) decisional practice. At a time when technological transformation and investment requirements in the telecommunications sector surge, failure to recognise efficiencies may bar consumer benefits from being realised.

We show that a more comprehensive assessment of efficiencies can rely on already available economic tools to improve current practices. As our analysis demonstrates, this will depend on fuller consideration of how to apply these tools appropriately to the telecommunications sector along several dimensions.

We thus examine and propose improvements relative to standing EC practice in respect of counterfactuals, relevant time horizon, non-price effects, the role of financial constraints, and out-of-market efficiencies. Furthermore, we provide guidance and recommendations for telecommunication companies to successfully claim efficiencies. While efficiency arguments have most often been put forward in merger proceedings, these insights also apply to cooperation agreements since the analytical framework is essentially the same. In neither domain, we suggest, will evolution along the above lines result in an overly lenient policy.

First, we set out a framework for systematic counterfactual analysis. Current practice frequently presumes network sharing agreements as counterfactuals in telecommunications mergers without providing sufficient evidence as to their likelihood. The suggested framework allows for a more systematic assessment of the reliability of the counterfactual. Second, we suggest a method to derive the relevance and weight of future expected efficiencies of the merger by benchmarking them with the duration of business plans which generally show the long-run nature of the returns to investment in this industry. In line with remedies in competition cases, the time horizon for efficiency assessments should depend on investment cycle duration as reflected in such business and investments plans. Third, we outline concrete econometric methodologies to quantify non-price effects such as the impact of quality improvements. Fourth, we discuss the relevance of financial constraints in the industry and how their effects can be identified. Fifth, we describe tools to quantify out-of-market efficiencies consistent with the current competitive assessment framework.

We conclude that the current legal framework for assessing efficiencies generally seems sufficiently flexible to accommodate broader efficiency claims by the parties to a merger or in a cooperation agreement. However, we see a need for a more comprehensive assessment of efficiencies, and stress that the relevant economic tools are available to improve on current

established practices. This will require both the competition authorities as well as the parties to a merger or agreement to be more detailed, concrete and substantiated in their assessments, which will allow competition authorities and parties to a merger or an agreement to realize consumer benefits while avoiding reduced competition or deterrence of entry in the long run.

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I. Introduction

1. The competitive assessment of mergers and agreements among competitors is essential to ensure economic efficiency and competitive markets in which consumers benefit from access to innovative services, low prices, higher quality of goods and services, and the opportunity to choose what they want to buy. It requires a weighting of supposed harm due to increased market power and possible benefits due to the creation of efficiencies. Despite their economic relevance, current practice shows that claiming efficiencies requires overcoming significant hurdles.[1]

2. Such efficiency arguments are of particular importance in the telecommunications sector. As these markets tend to manifest network efficiencies of scale, the sustainability of the business depends on reaching sufficient scale, which often leads to relatively large market shares. As a result, there necessarily will be few network players in many markets. Most European markets have three to four Mobile Network Operators (MNOs) and a varying number of Mobile Virtual Network Operators (MVNOs). Efficiencies from mergers and horizontal agreements generally depend on market specific circumstances so that a full competitive assessment requires an in-depth analysis of efficiencies.

3. However, current European competition policy practice imposes high hurdles for recognizing such efficiencies. This report identifies certain areas where (i) a broader acceptance of efficiencies is warranted, and (ii) economic analysis can provide credible quantification. In particular, we show that the unique features of the telecommunications sector (e.g., large investments and substantial fixed costs) imply a considerable potential for realizing efficiencies from horizontal cooperation and consolidation.

4. This report is structured as follows. Part II reviews how the European Commission (EC) currently assesses the efficiency effects from horizontal agreements and mergers. Section II.A presents the general framework for the evaluation of efficiencies in mergers and horizontal agreements. Section II.B lays out the decisional practice of the EC regarding efficiencies with a particular focus on Phase II concentration decisions in the telecommunications sector. In Section II.C, we identify the limitations of the EC's approach to assessing efficiencies.

[1] Buehler, B. and Federico, G. (2016), "Recent developments in the assessment of efficiencies of EU mergers", Competition Law & Policy Debate, 2(1), 64–75.

5. Section III lays out potential improvements to the way efficiencies are assessed by the EC, with an application to the telecommunications industry. It provides concrete guidance and economic tools that can assist in effectively claiming efficiencies within the current framework based on the decisional practice identified in Section II and sets out how the current application of the framework should be adapted to allow for a broader acceptance of efficiencies that ultimately benefit consumers.

6. Section III.A reviews the pattern in in EC merger decisions of rejecting efficiencies based on the claim that they lack "merger specificity". The EC frequently asserts that parties to a concentration could create similar efficiencies through cooperation such as network sharing agreements (NSAs), for the simple reason that they are perceived as widespread among network operators. We argue that this reasoning is flawed and it is incorrect to assume that an NSA can be assumed as the default counterfactual in the telecommunications sector.

7. In Section III.B, we discuss the role that time horizons play in the EC's assessment of efficiencies. Generally, the EC can accept efficiencies only if they materialise in a "timely" manner.[2] However, this has typically been interpreted as a time horizon of two to four years,[3] without any regard to industry specificities such as the length of investment cycles. We further explain in Section III.C how non-price efficiencies such as network quality improvements can be demonstrated and quantified. Section III.D illustrates how horizontal cooperation can create efficiencies by relaxing financial constraints, thereby increasing investments beyond what would occur absent a merger. Section III.E provides guidance on how to substantiate efficiencies that would materialise outside the affected markets. Section III.F discusses the economic consequences of a less restrictive practice of efficiency assessments by the EC more generally. Section IV concludes.

II. Efficiency assessments in current EC Practice

8. This section reviews how the EC has evaluated efficiencies in past cases of mergers and cooperation agreements. We describe the conceptual framework for this assessment and how it has been applied to different types of efficiencies. We discuss the deficits in efficiencies assessment that this practice reveals. Concrete and detailed proposals for revisions to assessment practice are discussed in Section III.

[2] Horizontal Merger Guidelines, paragraph 83.

[3] See for example, M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, paragraph 940.

9. Section II.A sets out the general framework for mergers and agreements. Section II.B shows how these principles have been applied for different types of efficiencies that have been claimed and assessed. Section II.C identifies potential improvements of assessment practice.

II.A. The EC framework for efficiency assessment in horizontal agreements and mergers

10. Despite slightly different terminology, there is no difference between the assessment of efficiencies under the EU Merger Regulation[4] and Article 101 TFEU.[5] Efficiencies must be verified, passed on to consumers, and be specific to the agreement concluded. Figure 1 matches the terminology under the Horizontal Merger Guidelines and Art 101(3) to illustrate this point.[6]

FIGURE 1: CONDITIONS TO BE FULFILLED BY EFFICIENCY CLAIM

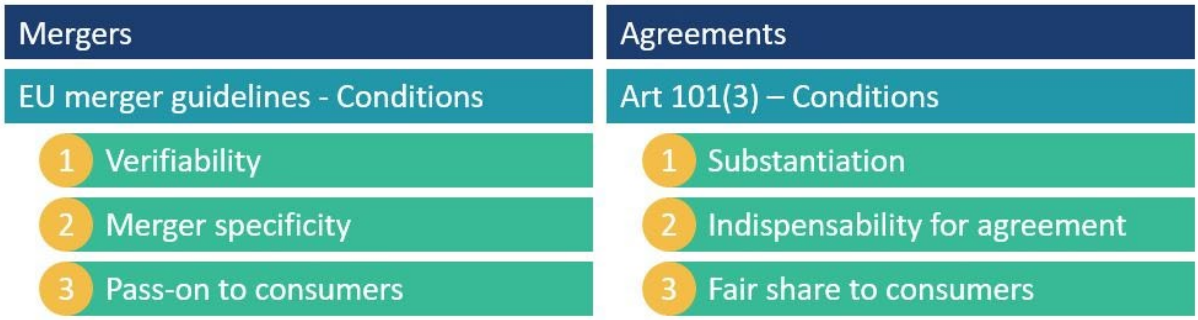

Illustration: Brattle.

11. Both the EU Merger Regulation and Art. 101 (3) TFEU acknowledge that efficiencies resulting from a merger or a horizontal cooperation can counteract potential harm to consumers.[7] The burden of proof to substantiate any efficiency claim lies with the parties to the horizontal cooperation agreement or merger, as they possess most of the information that allows identification and quantification of efficiencies.

12. For horizontal agreements and mergers, the EC will investigate for each efficiency claim (a) whether it is properly verified or substantiated, (b) whether efficiencies are merger specific or the agreement indispensable for realizing them, and (c) whether the efficiency benefits are at least partially passed on to consumers.

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4 Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings.

5 Treaty on the Functioning of the European Union.

6 This report focuses on Article 101(3) TFEU. This does not imply that all agreements between undertakings are generally caught by Article 101 TFEU, as they may escape the provisions of Article 101(1) TFEU.

7 Horizontal Merger Guidelines, paragraphs 76ff; Article 101(3) Guidelines, Section 2.3.

(a) **Verifiability**: the parties need to provide evidence to support the efficiencies claimed. The Horizontal Merger Guidelines encourage quantification of efficiencies *or, where this is impossible, specific identification of the benefit to consumers*.[8] In practice, whether there is a 101(3) claim or an efficiency claim in a merger case, an efficiency claim must be substantiated by a clear description of the nature of the claimed efficiency, the likelihood and magnitude of each claimed efficiency (quantification), and also that the efficiencies are likely to be achieved in a timely manner.[9]

(b) **Specificity (indispensability)**: efficiencies must be a direct consequence of the merger or horizontal agreement: it must not be possible to achieve similar efficiencies without the agreement or merger.[10] This means that the agreement or merger must be the direct cause of the efficiency. In essence, this condition requires the parties to state a counterfactual to the agreement or merger and show that the efficiencies outweigh the anticompetitive effects when compared to that counterfactual. In practice, the evidential support for the counterfactual in absence of the agreement or merger is essential for an analysis to support this requirement. For horizontal agreements, the specificity requirement is often framed as a requirement that the restrictions imposed on undertakings must be "indispensable" to obtain the efficiencies (i.e., the counterfactual is taken as the agreement without clauses that can restrict competition).

(c) **Fair share of benefits goes to consumers**: in the case of cost reductions, this requires a demonstration of pass-on of the benefits to consumers through lower prices. In the case of quality improvements, the EC must assure that these improvements are not "clawed back" through price increases. In both cases, it needs to be shown that benefits at least compensate consumers for actual (or likely) negative impacts on consumers caused by a potential restriction of competition from the horizontal cooperation or merger.[11] Generally, consumers are more likely to benefit from a reduction in variable costs than fixed costs, as pricing and output decisions are generally only determined by costs that are variable over the time horizon for which prices are fixed. However, the EC is in principle open to accepting fixed cost savings as efficiencies, as long as the price setting process is such that fixed costs savings would typically lead to lower prices. Furthermore, the more significant the market power of the parties to the agreement or merger, the smaller is generally the incentive to pass on the efficiency gains to customers. Hence,

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8 Horizontal Merger Guidelines, paragraphs 86-88.

9 Article 101(3) Guidelines, paragraph 51. Section 3.2.2. of the Article 101(3) Guidelines provides a non-exhaustive list with examples of possible efficiencies: cost efficiencies – in particular, those resulting from economies of scale and economies of scope – and qualitative efficiencies – in particular, new products, products of higher quality, and products with novel features.

10 Horizontal Merger Guidelines, paragraph 85; Article 101(3) Guidelines, paragraphs 73ff.

11 Article 101(3) Guidelines, paragraph 85; Article 101(3) Guidelines, paragraphs 83ff.

the EC is then also less likely to conclude that efficiencies would counteract any potential harm from the merger to consumers.[12]

13. The final assessment takes the form of a balancing test where the benefits to consumers after pass-on (cost reductions) or claw-back (quality improvements and other direct benefits to customers) are compared with the incentive to increase prices. The EC will only allow the merger or horizontal agreement if consumers "*will not be* worse *off as a result of the merger*"[13] or horizontal agreement.

14. Some of these assessments may be qualitative. To outweigh the potential anticompetitive effects of a merger, claimed efficiencies must be substantial and timely and, in principle, should accrue to customers in the market in which the detriment to competition would otherwise arise.[14] A narrow interpretation of the last two conditions risks substantially restricting the recognition of valid efficiencies from a merger either because the social returns from related investments are not realized because investment cycles are longer than recognized by the EC, or because there may be substantial social benefits from an agreement or a merger that accrue to customers outside a market but could far outweigh any losses from potential anticompetitive effects in the market. We review these issues further below when assessing the current policy.

II.B. The implementation of the assessment framework in practice

15. This section reviews how the EC has assessed efficiencies in its decisional practice in the telecommunications sector. Because publicly available information on the decisional practice for cooperation agreements is limited, the following subsections II.B.1 to II.B.3 focus on the EC's assessment in Phase II merger decisions. However, since the analytical framework is essentially the same, the insights also apply to cooperation agreements that are assessed under Article. 101(3) TFEU.

16. In the following review, we have focused the analysis on efficiency arguments in a number of particularly relevant merger decisions from the last 20 years in the telecommunications sector.[15] We categorise these into cost efficiencies (see Section II.B.1), quality efficiencies

[12] Horizontal Merger Guidelines, paragraph 84. See also M.6166 (Deutsche Börse / NYSE Euronext), Commission Decision, paragraph 1337, where the EC indicates in its decision that, due to the merging parties obtaining a (near) monopoly, it is unlikely that any efficiencies would be passed on to the consumer sufficiently to outweigh the competitive harm.

[13] Horizontal Merger Guidelines, paragraph 79; Article 101(3) Guidelines, paragraph 85.

[14] Ibid.; Article 101(3) Guidelines, paragraph 43.

[15] Identified by the economic sector NACE code "J.61". For brief overviews of each concentration case, see Appendix A.

(see Section II.B.2), and network rollout efficiencies (see Section II.B.3). This exercise provides some useful guidance to the type of economic evidence that is currently necessary to successfully put forward efficiency arguments.

II.B.1. Cost efficiencies

17. Mergers can bring about cost savings in production or distribution, which may incentivize the merged entity to charge lower prices following the merger. Whether efficiencies will lead to a net benefit to consumers, as required by the merger rules, depends on whether prices do indeed fall after the merger. This is more likely if cost efficiencies lead to reductions in variable or marginal costs than when they lead to reductions in fixed costs.[16] However, the distinction between fixed and variable costs is not unambiguous and the decisive question is how any type of cost reduction affects the actual price setting at the firms in question.

18. However, as in other markets, the EC regularly rejects efficiency claims in the telecommunications sector related to costs that are unambiguously fixed (particularly the reduction of overhead costs like the costs for customer service, IT and administration),[17] costs savings from a reduction of the retail distribution network,[18] and reductions of alleged scale disadvantages.[19]

19. According to the EC, the relevant costs for a pass-on analysis are ultimately the actual costs that are observed and taken into account by a firm when it sets its prices. Cost pass-on must be estimated based on the actual pricing behaviour of the firm, not the theoretically optimal behaviour of a firm that perfectly knows its marginal cost. To make a credible claim, the basis on which prices are set has to be proven. This means that in order to successfully claim fixed cost savings as an efficiency, it must thus be demonstrated "*that fixed costs […] would, in any way, be relevant for price setting decisions by the merged entity or any other strategic decision related to the retail offers*".[20]

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[16] Horizontal Merger Guidelines, paragraph 80. Variable costs are those costs that vary with the production level or sales over the relevant time period. Marginal costs are associated with expanding production or sales at the margin.

[17] M.3916 (T-Mobile Austria / Tele.ring), Commission Decision, paragraph 47; M.6992 (Hutchison 3G UK / Telefónica Ireland), Commission Decision, paragraph 781; M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, Section 6.9.3; M.7612 (Hutchison 3G UK / Telefónica UK), Commission Decision, Section 8.4.3; M.8792 (T-Mobile NL / Tele2 NL), Commission Decision, paragraphs 901 and 909.

[18] M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, Section 6.9.2.

[19] M.6497 (Hutchison 3G Austria / Orange Austria), Commission Decision, Section 7.4.

[20] M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, paragraph 1202.

20. Notifying parties have claimed in several instances that fixed cost savings would increase their cash flows, thereby enabling investments in infrastructure capacity to the benefit of consumers.[21] In all of these cases, the EC concluded that the notifying party had not demonstrated that scale efficiencies or fixed cost savings would benefit consumers through increased investments due to a relaxation of cash flow constraints. This means that the EC does not reject the argument in principle. However, these cases show that meeting the EC's standard of proof is substantially harder when one has to demonstrate the impact of cash flow on investment behaviour than when variable cost efficiencies have to be demonstrated.

21. In contrast to fixed cost savings, variable cost savings have thus been more successfully claimed as efficiencies. In M.8792 (T-Mobile NL / Tele2 NL), Deutsche Telekom submitted that as a consequence of the merger, the roaming fee that Tele2 NL currently paid to it for providing access to the 2G and 3G network to its customer base would be internalised by the merged entity.[22] The EC acknowledged that national roaming costs are charged for actual traffic and hence considered these costs to be variable costs.[23] Moreover, the EC considered the savings related to Tele2 NL's national roaming costs to be merger specific as "*they are unlikely to be achieved by other means*".[24]

II.B.2. Quality efficiencies

22. Consumers may not only benefit from lower prices due to the pass-through of cost reductions. From an economic perspective, an increase in quality at constant prices is identical in effect to a price decrease. Such quality effects are particularly relevant for the telecommunications sector. For example, prices for low-, medium- and high-value mobile telephony packages do not tend to move very much over time. However, the volume of included data increases rapidly, leading to a fast decline in the unit price of data.[25] As a result, there are more frequently extensions of service portfolios (e.g., quality improvements) at constant prices, than adjustments of nominal prices of the packages. This means that quality-adjusted prices show much larger changes than the (relatively stable) nominal prices of mobile plans within a given pricing category. To assess merger effects on consumers it thus becomes of central importance to look at quality improvements.

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[21] M.6992 (Hutchison 3G UK / Telefónica Ireland), Commission Decision, paragraphs 764, 786 to 799; M.7612 (Hutchison 3G / Telefónica UK), Commission Decision, paragraphs 2339, 2558; M.7758 (Hutchison 3G Italy / Wind / JV), Commission Decision, paragraphs 1436ff; M.8792 (T-Mobile NL / Tele2 NL), Commission Decision, paragraph 901.

[22] M.8792 (T-Mobile NL / Tele2 NL), Commission Decision, paragraph 887.

[23] Ibid., paragraph 894.

[24] Ibid., paragraph 898.

[25] Aimene, L., Jeanjean, F. and Liang, J. (2021), "Impact of mobile operator consolidation on unit prices", *Telecommunications Policy*, Figure 2.

23. Quality improvements in mergers in the telecommunications sector arise primarily from improvements in network quality. Such quality can be measured along multiple dimensions, including network coverage,[26] up- and downloading speeds,[27] and the stability of up- and downloading speeds in the face of congestion.[28]

24. However, efficiency claims about network quality have been dismissed by the EC as not merger specific or non-verifiable. Merger specificity is mostly rejected on the basis of the assertion that an NSA would be the likely counterfactual to the merger. The EC also often alleges that the parties have not proven that the customer benefits of increased quality would not be clawed back through higher prices. For example, in M.6497 (Hutchison 3G Austria / Orange Austria), the EC rejected efficiencies on all three grounds.[29] In M.6992 (Hutchison 3G UK / Telefónica Ireland), the EC came to the conclusion that the efficiencies were not merger specific, because absent the merger, the target would have deployed a network comparable to the merged entity's planned network. In M.7018 (Telefónica Deutschland / E-Plus), the EC was concerned about the time that it would take to achieve the efficiency benefit. It noted that the quality improvements claimed were likely to materialise only to a limited extent since the customers of the target would remain on the legacy network for up to two years.

II.B.3. Rollout efficiencies

25. The benefit to consumers from the rollout of new technologies like fiber networks and new mobile standards comes from the increase in speed achieved in an environment with a strongly increasing demand for data volume transmitted. Since these higher speeds lead to significant improvements in connectivity which supports economic and social activities, there is a public interest in fast rollout speeds. However, quickly rolling out new networks covering a wide geographic area requires concentrating a large amount of investment in a short period of time. Given the total cost of a network rollout, telecommunication companies, including larger ones, will be financially constrained when they have to roll out a network with broad coverage very quickly. Cooperation and mergers between multiple investors can ease these financial constraints by spreading default risk, allowing larger sums

[26] M.6497 (Hutchison 3G Austria / Orange Austria), Commission Decision, Section 7.3; M.6992 (Hutchison 3G UK / Telefónica Ireland), Commission Decision, Section 7.10.2; M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, paragraphs 955 to 961; M.7758 (Hutchison 3G Italy / Wind / JV), Commission Decision, Section 7.5.4.

[27] M.6497 (Hutchison 3G Austria / Orange Austria), Commission Decision, Section 7.1; M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, paragraphs 962 to 976; M.7758 (Hutchison 3G Italy / Wind / JV), Commission Decision, paragraphs 1463 to 1465.

[28] M.6497 (Hutchison 3G Austria / Orange Austria), Commission Decision, Section 7.1.

[29] Ibid., Section 7.3.

of money to be raised on capital markets and thus financing the investment needed to achieve faster rollout speeds.

26. In addition, there tend to be economies of scale and scope that make a cooperative network rollout more efficient. For example, a site of a mobile telecommunication network is likely more profitable jointly than individually, because generally the cost to serve the customers of two firms around one site is less costly than constructing two separate sites for each firm to serve its own customers only.[30]

27. Efficiencies based on increased rollout pace and increased rollout coverage have been put forward by parties in past merger proceedings.[31] For example, in M.6497 (Hutchison 3G Austria / Orange Austria), it was argued that the transaction would allow the notifying party to roll out LTE nationwide within a shorter time period. The EC did not, however, consider this efficiency to be merger-specific because it found that this could be achieved through other types of cooperation.[32] The EC also questioned whether benefits would stay with customers, suggesting that benefits might be clawed back.[33] Similar objections to claims of faster network rollout were raised in M.6992 (Hutchison 3G UK / Telefónica Ireland). In this case, the parties also claimed a wider rollout covering more territory and serving sparsely populated areas. The EC has in the past rejected these claims as not sufficiently supported with evidence to be verifiable. [34]

II.C. Limitations of the current efficiency assessment by the EC

28. The analysis of the EC's efficiency assessment in Sections II.A and II.B reveals that some plausible efficiencies have been regularly rejected. This section lays out that for some grounds of rejection of efficiency claims the reasons are questionable and that the corresponding assessment standards should be adjusted to correctly take into account the respective market characteristics.

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[30] See Cojoc, A., Ivaldi, M., Maier-Rigaud, F. P. and März, O. (2020), "Horizontal Cooperation on Investment: Evidence from Mobile Network Sharing", *TSE Working Papers*.

[31] M.6497 (Hutchison 3G Austria / Orange Austria), Commission Decision, Section 7.2, M.6992 (Hutchison 3G UK / Telefónica Ireland), Commission Decision, Section 7.10.2; M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, paragraph 867; M.7612 (Hutchinson 3G UK / Telefónica UK), Commission Decision, paragraphs 2368 to 2376; M.7758 (Hutchison 3G Italy / Wind / JV), Commission Decision, paragraph 1448; .8792 (T-Mobile NL / Tele2 NL), Commission Decision, paragraph 902.

[32] M.6497 (Hutchison 3G Austria / Orange Austria), Commission Decision, Section 7.2.2.

[33] Ibid., Section 7.2.3.

[34] M.6992 (Hutchison 3G UK / Telefónica Ireland), Commission Decision, paragraph 880.

29. First, the EC regularly rejects efficiencies on the claim that they are not merger specific. This is based on an assertion that they could be similarly achieved by less restrictive means.[35] Most often, the EC assumes that NSAs could be easily implemented and thus would be chosen if there were efficiencies from network consolidation. For example, in M.7758 (Hutchison 3G Italy / Wind / JV), the EC claimed that NSAs are "*widespread in markets for mobile telecommunications services within the European Union and do not involve particularly insurmountable obstacle*".[36] In reality, however, NSAs can only be an alternative in very specific circumstances. A careful analysis of the counterfactual and definition of the standard of proof is needed that currently is not found in EC decisions.

30. Second, the EC is generally reluctant to accept efficiencies that materialise later than four years after a merger. The longer it takes for efficiencies to materialise, the less weight the EC will assign to them, reflecting the principle that costs and benefits should be appropriately discounted. This principle is summarized as the requirement that efficiencies must be "timely" to be considered.[37] In the EC's merger practice, a period of two to four years is generally used for merger assessment – independently of the sector under consideration and its specific investment cycle.[38]

31. Third, the EC does not consider the impact of mergers on financial constraints and thus ignores cash flow efficiencies arising from a merger. This appears to arise from the incorrect idea that companies with high market capitalization do not face financial constraints when they need to make very large investments as they are typical for network infrastructure. The EC's practice may lead to non-optimal investment levels, particularly in sectors that require large investments for which internal funding is critical even when there is access to the financial markets.

32. Fourth, it appears particularly difficult to demonstrate efficiencies for quality improvements. Even if there is a recognized way of how to estimate cost pass-through to obtain estimates on quality efficiency effects, the EC has been less clear about how to measure the extent to which the corresponding benefits could be clawed back through price increases in response to the quality increase.[39] This effectively leads to an outcome where efficiencies from quality improvements are routinely rejected without further analysis.

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[35] Horizontal Merger Guidelines, paragraph 85.

[36] M.7758 (Hutchison 3G Italy / Wind / JV), paragraph 1509.

[37] Horizontal Merger Guidelines, paragraph 83.

[38] See M.6992 (Hutchison 3G UK / Telefónica Ireland), Commission Decision, paragraph 765; and M.6570 (UPS / TNT Express), Commission Decision, paragraph 906.

[39] As mentioned in Section II.B.2, the telecommunications industry is to the contrary of this presumption characterised by continuous quality increases through higher bandwidths and increased data volumes at stable prices.

33. A further principle in the EC's practice is that efficiencies generally should accrue to customers in the market in which the detriment to competition would otherwise arise.[40] The EC generally disregards increases in consumer welfare if they materialise outside the considered market affected by a merger or a horizontal agreement. This is highly problematic from an economic point of view since these benefits can be substantial. It is also hard to see any risks from more flexibility on such efficiencies, since the specificity of out-of-market efficiencies to a merger or a horizontal agreement means that the application of such rules will generally be very limited. Section III will discuss how the new sustainability chapter in the revised Horizontal Guidelines may provide further insights into this debate.

III. Methods to credibly quantify and obtain acceptance of broader efficiency arguments

34. As the previous section has shown, a review of the current efficiency assessment practice of the EC allows for identifying where the economic analysis of efficiencies presented by the parties has not been recognized. In this section, we provide concrete methods to substantiate efficiencies more robustly and show how standards of competitive assessments need to adapt to capture efficiencies to their full extent. On the one hand, we address criticisms raised by the EC about the evidence in previous cases. On the other hand, we show where the EC's current assessment framework could be improved. The suggested methods address the most common criticisms voiced by the EC when previously dismissing efficiency analyses and discuss these points in the context of the three identified areas based on our review in Section II.

35. While from the economic viewpoint, the suggested analyses and methods for substantiation of efficiencies can apply to both cooperation agreements and mergers, we primarily discuss these in the framework of merger assessments in the following subsections. The analysis for cooperation agreements is generally the same. We extend the discussion to such agreements where there are more specific issues to address.

[40] Horizontal Merger Guidelines, paragraph 79; Article 101(3) Guidelines, paragraph 43.

III.A. The importance of the correct counterfactual scenario

36. As was shown in Section II, merger specificity is a key criterion that has led to the failure of efficiency arguments in past merger reviews in the telecommunications sector. This criterion ensures that the merger does not receive credit for benefits that could have been obtained through means that are less restrictive of competition. The criterion of merger specificity makes clear that efficiencies are only ever defined in relation to the most likely counterfactual that is expected in the absence of the transaction. The most common rejection of efficiencies of mergers in the telecommunications sector has come from the claim that NSAs could replicate the claimed efficiencies. Only those efficiencies arising purely from the transaction, and cannot be obtained in the counterfactual, will be accepted by the EC in the overall competitive assessment of the transaction.[41]

37. Generally, a frequently applied assumption about the relevant counterfactual scenario is that without the transaction, the status quo would continue. For many transactions, especially in mature industries, this assumption is likely correct, as there may be little reason to believe in an alternative scenario to the status quo. Parties therefore frequently put forward the status quo as the counterfactual and claim all the efficiencies arising from the transaction are merger-specific.

38. Based on the presence of NSAs and co-investment projects in the telecommunications industry, the EC frequently asserts that absent the transaction, such agreements are the realistic counterfactuals for the efficiency assessment, thereby substantially reducing the efficiencies that are strictly merger-specific.[42] However, from what can be observed in published merger assessments,[43] neither the EC nor the parties have systematically analysed potential counterfactuals in terms of economic incentives and transaction specificities to motivate which particular counterfactual should or should not be deemed relevant.

39. Economic theory and reasoning – as well as empirical regularities – can be a helpful guide for establishing a systematic process to select the correct counterfactual for the efficiency assessment. First, a counterfactual different from that of the status quo has to be considered

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[41] Horizontal Merger Guidelines, paragraph 85.

[42] For cooperation agreements, the question about the counterfactual scenario is less pivotal, as a cooperation agreement will in nearly all instances result in a lower reduction in competition relative to a merger. As such, the efficiencies of the agreement become less important to outweigh the competitive effects. In cooperation agreements, therefore, the default assumption is frequently that the parties will independently pursue their business strategy absent the agreement. The efficiencies obtained through the cooperation can then be directly assessed by a comparison with the status quo.

[43] See Appendix A.

whenever there are important dynamic changes in the industry, so that current investment behaviour potentially changes the market situation considerably from the status quo. For example, consider an efficiency claim that a merger leads to investment in a new production technology that is expected to reduce costs. For this efficiency to be fully merger specific, the investment should not take place at all in the absence of the transaction.

40. To assess this, it is necessary to investigate what cost-reducing activities the firms could and would undertake in the absence of the merger. For example, the firms might be pursuing the same technological improvement but would simply take longer to achieve it. This would then reduce the merger-specific efficiency that can legitimately be claimed.

41. In practice, the appropriate counterfactual can be assessed or constructed by analyzing the merging parties' investment plans before the transaction. Alternatively, one would expect that the cost savings due to the merger (i.e., efficiencies) would be explicitly mentioned and evaluated in internal decision documents in preparation for the merger, if these efficiencies are expected to be substantial.[44] In this case, one could even quantify these from the internal merger analysis.[45] Existing documents and analyses must therefore be the starting point for any determination of the counterfactual and the efficiency analysis that builds on it.

42. With that in mind, and because alternative counterfactuals to a transaction are themselves highly complex,[46] in many examples they will not even be considered since they are *a priori* seen as infeasible or far inferior in terms of efficiency gains. There are therefore good reasons why such assessments on the counterfactual will not be available in real market circumstances. In many instances, it seems unlikely that the parties would have produced a thorough assessment of potential cooperation agreements short of the merger in question within the normal course of business. In the case where no internal documents assessing or identifying a counterfactual exist, this in itself is a helpful indication that the business did

[44] The principles underlying the assessment of the business case of a transaction very much align with the relevant economic principles of merger review. The operative teams in a firm identify benefits, such as those arising from opportunities to reduce costs post-transaction, and factor this into their forward-looking business plan and purchase price. These benefits are often grouped into the broader term of synergies, but in economic terms and for the purposes of review by a competition authority can very much equate to efficiencies.

[45] As is always the case with relying on internal documents, it is important to consider the target audience of such documents in order to assess their message. For example, suppose they were part of investor presentations trying to elicit capital contributions from external sources. Such documents will naturally highlight the upsides and expected benefits to investors. They may provide a long-term view of efficiency gains from the transaction. Similarly, documents created internally addressing operational aspects may have a shorter timeframe to assess efficiencies obtainable in the status quo.

[46] Koutroumpis, P., Castells, P. and Bahia, K. (2021), "To share or not to share: The impact of mobile network sharing for consumers and operators", *The Oxford Martin Working Paper Series on Economic and Technological Change*, pp. 3–4; Accenture (2021), "Active network sharing – Strong partnerships for accelerated, efficient 5G deployment".

not find sufficient reason to consider alternatives to the agreement/transaction and thereby implies that there are no viable alternatives. This should be seen as a strong first indication that alternative counterfactuals are less likely to be implementable in practice and the parties might need to provide further motivation for the most realistic counterfactual. Economic theory combined with a documented pattern of industry experience can then provide the evidence necessary to establish the counterfactual.

43. In particular, there are circumstances under which the claim that efficiencies could be obtained through a cooperation agreement can be shown to be incorrect or at least highly unlikely. Our understanding from speaking to industry participants is that there are three main factors why it may be impossible to conclude such agreements: asymmetry between firms, asymmetric information about the likely benefits of the joint effort, and very different views of the own contribution to the cooperation relative to that of the other party.

44. These insights align with those of the economic literature on bargaining :

- **Firm asymmetry**: asymmetry between firms (e.g., asymmetry of their network scope or stage of network roll-out, etc.) limits the likelihood of efficiency-enhancing agreements like network sharing as an outcome. Experimental work on bargaining has shown that negotiation breakdown is much more likely when firms are asymmetric.[47] For example, asymmetries between firms in innovative capabilities have been shown to decrease the likelihood of R&D cooperation.[48] Moreover, asymmetries in preferences can further reduce the likelihood of concluding agreements. For example, two firms may have different preferences for certain network properties such as quality and coverage. In such a situation, there could be tensions between cooperating partners on whether to increase quality for existing coverage or increase coverage at existing quality.

  Overcoming such asymmetries between firms will then require some form of compensation from one party to the other. In simplified bargaining models such asymmetries can be overcome by arranging appropriate side payments. However, once multiple dimensions of asymmetries, bargaining costs and uncertainties are introduced – as is the case in reality in complex forward-looking agreements in the telecommunications sector – bargaining can break down.[49]

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[47] The difficulties in obtaining a mutually beneficial cooperation in unequal partnerships is documented in the economic literature. For example, in Hennig-Schmidt, Irlenbusch Rilke, and Walkowitz (2018) "Asymmetric Outside Options in Ultimatum Bargaining: A Systematic Analysis," *International Journal of Game Theory*, it is shown that when asymmetries in players' outside options increase, the likelihood of bargaining breakdown increases.

[48] Mukherjee, V. and Ramani, S. V. (2011), "R&D cooperation in emerging industries, asymmetric innovative capabilities and rationale for technology parks", *Theory and Decision*, 71(3), pp. 373–394.

[49] Note that asymmetries between firms might also reduce the likelihood of efficiency enhancing agreements as an outcome if pro-competitive effects outweigh the efficiency gains. While there may be efficiency gains

- **Asymmetric information**: the possibility of bargaining breakdown becomes even more likely when there is asymmetric information between the firms.[50] For example, even where the firms perfectly align on preferences, they may have different information about the outcome of the planned joint effort. As each party has an interest in misstating their information in their favour, scepticism about claims of the counterparty in negotiations is appropriate, but will at times lead to a breakdown of negotiations even if there would be an efficient solution. When there are already asymmetries in incentives, this asymmetric information will make the impact of asymmetry greater and lead more often to bargaining breakdown.
- **Overconfidence:** finally, even if there is perfect alignment of firms across all dimensions, there is the well-documented behavioural phenomenon of "overconfidence".[51] One version of this that can be documented with experimental evidence is that one's own contribution to an outcome is systematically overestimated, while the contribution of others is systematically underestimated.[52] With asymmetric firms this overconfidence bias can be particularly strong, as each firm's self-evaluation will not be constrained by objective information. From our understanding this is also a phenomenon that occurs in real business negotiations including those on NSAs and other cooperation agreements in the telecommunications sector.

45. Therefore, there are robust empirical findings about criteria that make bargaining breakdown more likely, for which it is unlikely that efficiencies can be achieved through a simple cooperation agreement. In a merger, on the other hand, control rights are directly transferred to the other party against a given payment, which means that behaviour in

from cooperation between a small and a large provider on network sharing, the benefits of the small provider will tend to be bigger than for the large provider. These disproportionate benefits, in turn, will make the smaller provider a relatively more effective competitor. Thus, when efficiencies are small, but strong pro-competitive effects exist, it is clear that the larger firm has no incentive to conclude an NSA. In such a scenario, only a merger is capable of realizing the efficiencies while not leading to anticompetitive effects, as the smaller firm may not have the capability of exercising significant competitive pressure in a realistic counterfactual.

[50] See e.g., Samuelson (1984), "Bargaining under asymmetric information", *Econometrica*, 52(4,) pp. 995–1005; Ausubel, L. M., Cramton, P. and Deneckere, R. J. (2002), "Bargaining with incomplete information", *Handbook of Game Theory*, 3, pp. 1897–1945.

[51] Kruger, J. and Dunning, D. (1999), "Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments", *Journal of Personality and Social Psychology*, 77(6), pp. 1121–1134. For similar phenomena see also Loewenstein, G. and Moore, D. A. (2004), "When ignorance is bliss: Information exchange and inefficiency in bargaining", *The Journal of Legal Studies*, 33(1), pp. 37–58; Ali, S. N. M. (2006), "Waiting to settle: Multilateral bargaining with subjective biases", *Journal of Economic Theory*, 130(1), pp. 109–137.

[52] Overconfidence is considered to be formed by three constructs: First, by the overplacement effect, which is about individuals overestimating their abilities and performance compared to other people. The second component is the overestimation effect, which pertains to individuals thinking that their abilities are better than they are. The last construct is the calibration of probabilities, which is about individuals overestimating their predictions. (Olsson, H. (2014), "Measuring overconfidence: Methodological problems and statistical artefacts", *Journal of Business Research*, 67(8), pp. 1766–1770).

future contingencies does not have to be negotiated. A merger agreement is thus significantly easier to negotiate than a complex cooperation agreement that requires specifying detailed duties within the cooperation.

46. The EC's decisional practice implicitly acknowledges the relevance of such impediments to mutually beneficial cooperation in the telecommunications sector. The difficulties to obtain a cooperation agreement – and thus the question why a cooperation agreement cannot realistically be assumed as the default counterfactual – does not relieve the merging parties from motivating why the status quo is the right counterfactual.

47. Importantly, even in instances where a cooperation agreement is a viable counterfactual, a merger may result in efficiencies beyond those found in the cooperation agreement. Even if an NSA were adopted in the counterfactual, this would not mean that there are no additional efficiencies from full integration. In NSAs, important network assets remain separately managed to retain control, most notably the network core, spectrum, cloud and platforms. As a result, some duplication of assets will remain in an NSA and the associated coordination costs will continue to exist and make the resulting network sharing solution less efficient than full integration of both firms as in case of a merger.

48. In practice, a more nuanced approach to efficiency assessment is necessary, because attributing either *no efficiencies* or *all efficiencies* to the merger does not deal with important relevant circumstances where there are merger efficiencies over and above the efficiencies achievable through partial cooperation.

49. The initial burden of proof to show which counterfactual should be considered to demonstrate merger specificity and the quantification of such efficiencies fall on the notifying parties.[53] A detailed argument based on the best evidence available on the counterfactual appears to be of particular importance, but is an often neglected step to support efficiency claims before quantifying efficiencies.

50. Whether a cooperation agreement is difficult to conclude or not is directly related to the characteristics of the parties involved. An efficiency analysis should first determine the most likely counterfactual by a "process of elimination" based on documented industry experience and the relevant economic arguments. The parties could provide economic arguments and evidence why specific counterfactuals are not likely to materialise, and thus why the selected counterfactual is the relevant one for the efficiencies assessment. Clearly, in order to ensure that transactions are reviewed with due consideration given to the net potential efficiency gains, it is necessary to establish an appropriate standard of proof for efficiencies. This standard of proof must be sufficiently stringent to ensure that there is an

[53] Horizontal Merger Guidelines, paragraph 87.

adequately high likelihood that the claimed efficiencies will materialise, while at the same time not being prohibitively high so that the standard cannot reasonably be met by the parties in their submissions.

51. In practice, we suggest the standard of proof should be in line with the "more likely than not" standard for establishing the correct counterfactual.[54] In such a framework, the parties would provide evidence supporting a counterfactual that is sufficient to show that it would be more likely than not that this counterfactual is going to materialise.[55]

52. Concretely, for this process the parties could provide both quantitative and qualitative evidence for excluding potential counterfactuals. On the qualitative side, valuable evidence would come from documents that mention alternatives to the transaction and ideally evaluate it, for example stating that the alternative is not feasible. It may also be possible to use economic theory to show that the particular counterfactual is unlikely in the absence of the merger due to the characteristics of the firms involved. Where sufficient qualitative evidence is not available to establish a counterfactual to a "more likely than not" standard, it may also be possible to do simple quantifications showing that the costs of implementing the core business rationale for the merger would be too costly or practically not executable.

53. If the likely counterfactual to the merger is, indeed, an NSA, there still remains the need to correctly consider the extent of such a sharing agreement and not use this as a presumption to be able to reject all merger efficiencies. Network sharing is not something that should be assessed solely at the extensive margin (i.e., whether it exists or not), but also at the intensive margin (i.e., to which degree of cooperation it leads). Network sharing needs to be considered on a continuous scale of viable options from low intensity (e.g., passive sharing of sites) to higher intensity (e.g., more active sharing of active equipment). In this context, it is also important to note that certain forms of low-intensity network sharing are not economically viable options anymore at the current technological stage, and should accordingly not be considered as the counterfactual scenario in an efficiency assessment.

54. Most important for assessing the incremental efficiency contribution of a merger is, however, the increase in efficiency it can generate relative to feasible NSAs. The more

[54] T-399/16 (CK Telecoms), Judgement of the General Court, paragraph 118.

[55] Economists would want to go further, as the correct counterfactuals may not be definable with certainty. Instead, each alternative counterfactual – and with it, the implied counterfactual efficiencies and competitive effects – could receive a probability of occurring, thereby allowing for an average probability-weighted counterfactual efficiency and competitive effect to which to compare the merger's efficiencies and competitive effects. This, however, would require substantial effort, since for each hypothetical counterfactual, the efficiency, competitive effects and realisation probability would need to be substantiated to the standards of the EC. In the event that multiple alternative counterfactuals could be deemed "more likely than not" to materialise absent the transaction, the most likely of those should be selected. This would, of course, require clear motivation as to why a specific agreement is more likely than others.

intense the presumed sharing arrangement, the more efficiencies will be created in the counterfactual scenario, thereby effectively reducing the merger-specific efficiencies that can be brought about by a concentration. At the same time, it has to be borne in mind that more intense sharing arrangements may not present the default scenario of choice because they are less likely given that substantially higher efforts are required to overcome technical complexities in order to realize them.

55. The difficulty in correctly establishing the counterfactual also given the regulatory limitations is illustrated by the recent six-year EC investigation into an NSA between O2 CZ and CETIN on one side, and T-Mobile CZ on the other side.[56] In this case, the EC suspected that the NSA between the two major operators in the Czech Republic reduced competition. Weighing the pro- and anti-competitive effects of various intensities of network sharing, after a five-year period of investigation the EC sought feedback for its complex set of commitments to alleviate its concerns. This shows that defining the specific implementation of restrictions that are truly indispensable for attaining efficiencies is challenging, and requires a case-by-case assessment for both concentrations and cooperation agreements.

56. Once the counterfactual is established, and if this counterfactual is the status quo, any efficiencies identified would be directly attributable to the transaction. On the other hand, if a counterfactual is established that could also provide (some of) the benefits of the transaction, then the efficiencies that can be claimed must be net of the efficiencies also realisable under the counterfactual. Indeed, this then requires the quantification of two sets of efficiencies – once for the transaction itself, and once for the identified counterfactual. Admittedly, such a thorough assessment of the efficiencies attributable to the transaction would go a substantial step beyond most current efficiency analyses. However, given the current practice for efficiency assessment by the EC, more needs to be done in order to overcome the default of a finding of non-specificity of efficiencies due to a presumption that NSAs are feasible. This more in-depth assessment of the potentially viable counterfactuals would mean a departure from the presumption that NSAs are always feasible alternatives: the EC could not credibly dismiss efficiency claims which have clearly reasoned through the selection of the adequate counterfactual and evaluated the efficiencies that are truly merger specific.

[56] AT.40305 (Network Sharing – Czech Republic).

III.B. Relevant time horizon in efficiency assessments

57. Generally, the EC is reluctant to accept efficiencies that are expected to materialise more than four years after the merger.[57] This is based on the reasoning that any potential reduction of competition arising from the merger usually occurs over a short time horizon, because prices can be changed quickly after transactions. Accordingly, the EC assumes that any efficiency benefit should arise within a relatively short time frame in order to balance out the competitive effects. The longer it takes for efficiencies to materialise, the more harm accrues and the more uncertain they become. So, efficiencies that are relatively far into the future are discounted by time preference and uncertainty, while price effects are seen as immediate and more certain.

58. Balancing this trade-off to give more weight to the immediate reduction in competition and less to the more distant and thus uncertain efficiencies may make sense in sectors with short investment cycles. In these sectors, there is little reason to believe that efficiencies resulting from the transaction that do not materialise in the short term will arise later on. However, for industries with long investment cycles – such as the telecommunications sector – a different assessment may be necessary. For example, under a strict regime that only considers efficiencies within two to four years, a merger-specific investment project that takes four years to complete for all efficiencies to then arise after year four, would not be considered at all. That none of these efficiencies would be considered in the competitive assessment is clearly incorrect and would result in reduced long-term consumer benefits when they outweigh the short term harm.

59. In industries with long investment cycles, the complete competitive analysis that considers both the competition-reducing and efficiency-enhancing effects should therefore examine both the short and long-term implications. Notably, the EC already considers the long-term negative effects on consumers when assessing mergers in R&D intensive industries such as pharma, precisely because investment cycles are often long in R&D. For this reason, overlaps in the product pipeline are assessed, where the merger can only have a long-term impact on competition.[58] The EC's practice also deviates from the practice for commitments in the context of co-investment projects in Article 79(3) of the European Electronic Communications Code that requires national regulatory authorities to make commitments binding for a period of "minimum seven years". In this context it is questionable why the analysis of longer time horizons in efficiency assessments has not been accepted so far, although this leads to an important and unjustifiable inconsistency.[59]

[57] See for example, M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, paragraph 940.

[58] M.8084 (Bayer / Monsanto), Commission Decision, paragraphs 81, 83, 1017.

[59] See Section II.C, paragraph 30.

60. The limited recognition of long-term efficiency gains resulting from longer investment cycles is also surprising when viewed in light of the EC's remedy requirements for mergers in the telecommunications sector. Again using the E-Plus/Telefónica merger as an example, the required commitments were to provide a remedy taker with a five-year network access remedy, which could be unilaterally extended for another five years.[60] It is clear that such a remedy that covers a potential span of ten years is not expected to resolve the short-term competition concerns. Indeed, the motivation behind this remedy's time frame was that the EC acknowledged that, because of the long investment cycles, it would take time for the remedy taker to create its own network in order to become a stand-alone countervailing competitive constraint. Being able to use the network of the larger merging parties in the meantime would effectively bring part of these expected future efficiencies forward.

61. The EC's own decisional practice therefore acknowledges in principle that efficiencies in the telecommunications sector may take substantial time to materialise. In order to find acceptance for such arguments, it is important for the parties to provide an efficiency assessment that reflects the long-term nature of investments and to credibly quantify the type of expected long-term benefits and their timeline for realisation.

62. Extending the time frame to reflect investment cycles should lead to a greater importance of quality improvements for efficiencies assessment in the merger review process than is currently the case.[61] To ensure that only the relevant efficiencies materially arising from the transaction are taken into account, there should be a substantial focus on correctly defining the right time frame. Practically, the process to identify the relevant time frame should again start with obtaining the necessary evidential support through qualitative evidence that reflects the time frame over which the firms consider investment decisions. For example, rollout plans for network deployment would indicate over which period the firm generally considers its investment decision to obtain the type of claimed quality improvements. Similarly, efficiencies obtained through a more beneficial network layout or capacity management ability as a result of the transaction may also require a certain duration until the relevant infrastructure is repurposed or reduced. A timeline for implementing such structural network changes would then serve as the basis for the time horizon of these types of claimed efficiencies.

63. Because the time it takes the merged entity to obtain these efficiencies is relevant, and efficiencies more distant in the future may be more uncertain, it may be warranted to give

[60] See M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, paragraphs 1322-1330.

[61] While we describe the mechanics here for the more traditional price/cost competitive effects, the same argument applies to quality effects. Because the traditional assessment is *ceteris paribus* (i.e., holding quality constant), relaxing this condition and considering avoidable quality changes will equally impact price/cost competitive effects.

less weight to efficiencies that materialise later. A simple comparison of the total efficiencies between the merger and the counterfactual scenario would be insufficient, as earlier efficiencies should receive more weight than later efficiencies. As is standard in economics, this would be effectively reflected in higher discounting of future efficiencies both due to interest rate effects but also the greater uncertainty of future returns.[62] Weighing current effects and long-term effects therefore poses the question of choosing the right discount factor. This choice depends on the specific uncertainty with respect to the achievability of the efficiency claimed, which will likely itself be subject to debate.

64. However, where necessary it seems natural to weight efficiencies over time in the same way as the firm does when making business decisions.[63] The discount factor the firm itself applies in its investment decision is the best guide as to how future effects should be weighed against current effects because it reflects how these are weighed by the business. The EC would then have to make specific arguments about why future consumer benefits should be discounted differently, which cannot be argued as a general proposition. The benefit of such an approach is also that discount factors are found in investment decision documents the firm will have on hand. Nonetheless, it may also make sense to provide the EC with sensitivity analyses of plausible other discount factors.

65. These elements were taken into account to some extent by the EC in its assessment of the UPS/TNT merger.[64] The EC states at paragraph 905 that "*However, it should also be recognized that in some industries, the process of integration may take longer*". Indeed, UPS and TNT are also firms active in network industries, like the telecommunications sector, with significant infrastructure that needs a considerable time to adapt to a changing environment. The EC continues in paragraph 906 by stating that, "*in view of the above, the Commission has decided in this case to consider as its baseline case efficiencies arising after three years. The focus on efficiencies expected to materialize in year three in this case satisfies the timeliness condition in that the analysis takes into account the necessary time to integrate in a complex setting but also the need to attribute less weight to efficiencies that are more distant in the future. In its overall assessment, the Commission will however also consider efficiencies expected after [Confidential information regarding efficiencies expected to arise from the Transaction] – though assigning less weight to the full scope of efficiencies achievable [Confidential information regarding efficiencies expected to arise from the Transaction]*".

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[62] Chiang, A. C. (1984). *Fundamental Methods of Mathematical Economics* (Third ed.). New York: McGraw-Hill, p. 280-281.

[63] This may result in a need to motivate the firm's own discount factor. However, as the firm has used such a factor in actual business decisions – and has made economic decisions on its basis – it will serve as a robust starting point. Should the EC object to the value chosen by the firm, it would need to justify the concerns.

[64] M.6570 (UPS / TNT Express), Commission Decision, paragraphs 905–906.

66. Because the forward-looking efficiency claim may require weighting earlier efficiencies higher than later ones, particular attention needs to be given to how the counterfactual evolves in comparison. Otherwise, the different times at which efficiencies may materialise in the actual and counterfactual are not accurately discounted in the analysis and may distort the competitive assessment. Take the hypothetical example where a merger will create efficiencies arising from network optimisation over the next five years, and the counterfactual is identified as an NSA which would be able to also generate those efficiencies.[65] However, assume the merger would achieve these efficiencies faster. In such a situation, a simple comparison of the total efficiencies would be insufficient, as earlier efficiencies should receive more weight than later efficiencies. The more asymmetric the efficiency schedule (i.e., how the efficiencies materialise over time), the more a direct comparison will be inaccurate.

III.C. Non-price effects

67. In this section, we discuss the benefits to consumers arising from non-price effects. In essence, they relate to quality improvements that are not reflected in price increases. Such quality increases effectively improve the value of a service and counterbalance increasing prices when adjusting for quality. For different industries, different quality effects can materialise from a cooperation agreement or transactions, but because there is no quantitative value immediately attached to the quality improvement, the acceptance of such non-price benefits to consumers is difficult to substantiate to the high standard of the EC. However, the EC has a precedent of accepting such efficiencies in the assessment of airline alliances, where the benefit to the consumer mainly lies in the increased convenience of travel (e.g., lounge access, check-through, and flight connections).[66]

68. From an economic perspective, an increase in quality at constant prices is identical in effect to a price decrease (since at constant quality, prices are lower). For example, if the price for a mobile contract stays constant but the included GB of data increase, then the price per GB will fall, implying that quality-adjusted prices fall. Thus, in principle, there is no reason not to evaluate efficiencies of such quality increases. For the telecommunications sector, non-price effects are particularly relevant because this is an industry where the contract prices are often kept constant or even decreasing while quality improves. For example, French

[65] For example, if the parties have infrastructure overlaps, then jointly, the parties could achieve coverage of some areas with only one party's network. The second party's network would become obsolete, and some of that obsolete infrastructure could be repurposed or removed. In principle, this could be achieved through both a merger and an NSA.

[66] See e.g., AT.39595 (Continental / United / Lufthansa / Air Canada), Commission Decision, paragraphs 64, 70.

mobile plans' consumer price index has significantly decreased since 2010,[67] while the speed, data volume and coverage have increased.[68] As such, it cannot be generally assumed that quality improvements resulting from consolidation or cooperation are clawed back via price increases.

69. The concrete methodology to evaluate non-price effects in the telecommunications sector would combine two established analyses used in competition economics: an upward-pricing-pressure (UPP) analysis corrected for the estimated consumer value of quality increases estimated through a hedonic price regression. This would allow one to create a quality-adjusted price based on an objective estimation of consumer willingness to pay.[69]

70. The first step is well recognised to establish the expected upward price effects of a transaction.[70] This analysis takes the margins of the merging parties and the diversion ratios to estimate the post-transaction price increase resulting from the internalisation of the reduction in competition between the two parties. The basic framework of the UPP analysis can, of course, also be applied to cooperation agreements, where any reduction in competition is lower as competition between the two parties remains (potentially even to the full extent as pre-cooperation). The result of the UPP analysis is a percentage price increase estimate due to this internalisation of former competitive constraints. However, the shortcoming of this analysis is that it does not consider any quality benefits brought about by the transaction or cooperation agreement, as it implicitly assumes prices at constant quality.

71. To consider the quality effect, the next step requires estimating the value consumers place on quality improvement. This can be done using an established econometric analysis called a hedonic price regression, which estimates how much a certain quality attribute contributes to price.[71] Taking the example of mobile plans again, a hedonic price regression allows for

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[67] ARCEP, "Evolution des prix des services de communications électroniques - Année 2020 - Marché Résidentiel Métropolitain", 26 May 2021, p. 3, available at https://www.arcep.fr/fileadmin/cru-1645453882/reprise/observatoire/indices-prix-fixes-mobiles/evolution-prix-services-CE-2020_260521.pdf .

[68] See e.g., ARCEP, "Mobile Service Quality", 22 October 2019, p. 2, available at https://en.arcep.fr/fileadmin/cru-1651234245/user_upload/45-19-english-version-new.pdf .

[69] For an application of constructing quality adjusted prices, see Maier-Rigaud, F. P., Ivaldi, M. and Heller, C. (2020), "Cooperation among Competitors: Network sharing can increase Consumer Welfare", *SSRN Working Paper*.

[70] Farrell, J., and Shapiro, C. (2010), "Antitrust evaluation of horizontal mergers: An economic alternative to market definition", *The B.E. Journal of Theoretical Economics*, 10(1), Article 9.

[71] See Karamti, C. and Grzybowski, L. (2010), "Hedonic study on mobile telephony market in France: pricing-quality strategies", *NETNOMICS: Economic Research and Electronic Networking*, 11(3), pp. 255–289. These methods can only extrapolate from the estimation of different dimensions of quality experienced by the consumer. One might think this is problematic when innovations are considered. However, that is only partially true: Most innovations will still primarily improve quality dimensions that are evaluated in a

an estimation of the average value of an additional GB of data volume, or Mbit/s of download speed, or percentage of rural network coverage based on historical and current mobile phone plans. For example, such quality-adjusted prices in the French mobile phone market were found to decline rapidly over time.[72] Because a hedonic price regression will draw inferences on quality values from historical observations, and the consumer valuation of quality metrics may change over time (e.g., a GB of data was likely worth more five years ago than it is today), a non-linear time dimension effect may be important to consider.

72. Once the value a consumer places on a unit of a certain quality measure has been estimated, the final step is to quantify how much the cooperation agreement or transaction will improve that quality measure. For example, a recent study found that "*the network sharing agreement under study generated cost savings for the sharing parties, which were passed-on to consumers in the form of lower prices and higher average download speed*".[73] The product of the value per unit of quality and the amount of quality units can then provide a robust quantification of the non-price effect of the transaction. If this non-price effect comes close to or exceeds the expected price increase established by the UPP, then the transaction or cooperation agreement is more likely to cause consumer benefits than harm.

III.D. The role of financial constraints

73. In EU merger policy, there currently exists a high burden of proof when arguing that a reason for the obtainable efficiencies arising from the merger is (in part) due to a merging party being financially constrained and therefore unable to invest at an equal level in the absence of the transaction. Accordingly, cost efficiencies that were aiming at improving cash flows, whereby additional investments would be enabled, have been rejected in multiple cases such as M.6992 (Hutchison 3G UK / Telefónica Ireland), M.7758 (Hutchison 3G Italy / Wind / JV) and M.7612 (Hutchison 3G / Telefónica UK).[74] The motivation behind the scepticism of binding financial constraints arises from the consideration that financial markets do not exhibit imperfections:[75] They are considered highly liquid and the firms in question sufficiently creditworthy to be able to access external financing. In the EC's view, this frequently implies that the additional financial capacity obtained through the merger could be equally replicated in the capital markets. Efficiency claims based on the additional access

hedonic regression. As such, this approach is also broadly valid for innovations. If at all, it will only be conservative in somewhat underestimating quality improvements for features that are not anticipated.

72 Ibid., page 258.

73 See Cojoc, A., Ivaldi, M., Maier-Rigaud, F. P. and März, O. (2020), "Horizontal Cooperation on Investment: Evidence from Mobile Network Sharing", *TSE Working Papers*.

74 For more details, see Section II.B.1.

75 Bator, F. M. (1958). "The Anatomy of Market Failure", *Quarterly Journal of Economics*, 72(3) pp. 351–379.

to the financial resources of the other firm would therefore not be merger specific and should not receive consideration in the assessment of the competitive effects, according to the EC.[76]

74. However, this frequently applied assumption used to dismiss efficiency arguments based on financial constraints falls short of the economic and finance literature, particularly in sectors where investment projects are very large and capital intensive, as is the case in the telecommunications sector.[77] This is because large infrastructure projects, such as the roll-out of fibre networks or the deployment of new mobile telephony networks, require very high capital outlays but face substantial uncertainty about future demand.[78] As a result, even large firms face financing constraints for such large investments, which causes these investments to be inefficiently spread out over time and reduces the speed of roll-out of network infrastructure.

75. Information asymmetries are an important reason for such inefficiencies. They result in a higher risk-premium that outsider financers attach to a project (as they remain more uncertain about the project outlook) than the firms themselves. Due to the information asymmetry, outside financing becomes comparatively costly. There will therefore be some degree of credit rationing, whereby the external financing available will be limited. As a result, the level of internal funds available to the firm will become essential for a project and for the ability to raise additional funding. In other words, due to the substantial uncertainties, long time frames, and information asymmetries inherent in large investment projects (even if the firms have high creditworthiness), neither external financing may be available at a cost level equal to internal financing, nor may the credit volume be unlimited.

76. Financial constraints can, however, be mitigated by the pooling of the resources of several companies with industry specific knowledge that spread the project risk among them. This essentially increases the collateral available for borrowing from financial institutions and thus makes larger investments and faster rollouts feasible.

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[76] In M.6992 (Hutchison 3G UK, Telefónica Ireland), the Notifying Party unsuccessfully claimed that "internal and external capital markets are imperfect". The EC rejected the claims on cash flow constraints and further concluded that the "Notifying Party has also failed to show in what way the internal capital market within Hutchison is malfunctioning". Accordingly, without compelling evidence to the contrary, the EC presumes well-functioning internal and external capital markets for investments. (See paragraphs 788 to 799)

[77] Shortall, T., M. Bourreau, and W. Maxwell (2020), "Cooperation between Firms to Deploy Very High Capacity Networks", *CERRE Report*; European Telecommunications Network Operators' Association (2017) "Annual economic report", p. 23.

[78] See e.g., Crampton, P. (2002), "Lessons learned from the UK 3G Spectrum Auction", section on "Why Were Prices So High?"; Troulos, C. (2013), "The Impact of Cost and Demand Uncertainty to the Fiber-to-the-Home Business Case", *Fiber and Integrated Optics*, 52(4), pp. 251–267.

77. These financial constraints in the telecommunications sector have now been recognized in regulatory policy. As infrastructure deployment becomes more costly, while deployment speed and coverage have become more central to industrial policy in the digital age, regulators have looked to ease financial constraints on firms to achieve their digitalisation goals. This is observable in the telecommunications sector, particularly by the ubiquitous deployment of networks through co-investment projects, which allow more collaboration in network deployment among network operators and more room for a regulatory assessment in the European Electronic Communications Code.[79] As industry insiders collaborate to bring new products and services to consumers, reliance on outside funding with asymmetric information decreases. Therefore, co-investment projects are in direct contradiction to the frequently raised claim that financial constraints are not relevant in a competition economics assessment.

78. Similarly, there can be efficiencies that are obtained through lessening the financial constraints of firms as a result of a merger – both directly and indirectly. A direct efficiency of reduced financial constraints is, for example, the ability to obtain funding at lower financing costs, which can be due to an improvement of the company's average financial rating.[80] The joint firm may also be able to use purely internal funds for projects that would otherwise have required more costly external financing, reducing costly borrowing requirements.

79. The indirect effects of financial constraints arise because the joint entity is more efficiently able to allocate less restricted but not limitless financial means. For example, if the merging parties overlap in the geographical customer base, some areas may become more attractive jointly than for each firm individually. As a result, allocating the financing to develop these areas benefits more consumers than if each firm individually develops their network based on their respective customer base.

80. The economic literature has derived conditions under which firms have a greater incentive to invest after the merger. [81] This is, for example, the case when innovation reduces costs. Similarly, reducing financial constraints through a merger not only leads to more liquidity

[79] European Electronic Communications Code, Article 76.

[80] While the transaction may result in the overall rating of the joint firm being lower than the rating of the more financially robust firm, the joint firm may still be better positioned to cover the total debt burden than each firm was able to cover their own on average. In other words, the financially sounder firm's risk profile improves the less sound firm's risk profile more than vice versa.

[81] Denicolò, V. and Polo, M. (2018), "Duplicative research, mergers and innovation", *Economics Letters,* 166, pp. 56–59.

that is available for investments, but also to increased incentives to use these resources for investments for the benefit of consumers.[82]

81. In terms of the practical implementation of financial constraint arguments in efficiency analysis, existing financial documentation should first be used to support the claimed financial constraints. These can be financial ratings, investment and co-financing offers obtained on the market, or other insights into the ability and limitations of the firm to individually receive credit in the open market of the volume needed for the investments envisioned as a result of the merger. Once financial constraints are established, finance simulation can identify what the expected financial ratings would be post-merger and how this would reduce financing costs. If investment and co-financing offers indicate reasons for borrowing limits, the change in financial liquidity of the firm post-merger could be assessed to determine whether the reasons would still apply.

82. In terms of indirect effects of financial constraints, the evidence put forward to support efficiencies would be to identify how the firm can better allocate the limited financial resources. For these purposes, investment decision models for finance allocation purposes can be drawn upon.[83] In such models, the expected return of potential projects is ranked to select those which have the highest return given a certain financing need and cost. In addition, because the merger can result in the return of individual projects to change (as was the case in the example above of roll-out profitability depending on potential customer density), it may then be possible to show that a different set of projects is financially more favourable.

83. Finally, it is important to note that the alleviation of financial constraints through a merger has, in practice, been shown to lead to substantial benefits for consumers: Before the acquisition of Tele2 NL by T-Mobile in the Netherlands, Tele2 was a minor market participant, incapable of exerting competitive pressure with its "competitive strength" likely to "deteriorate" in the future.[84] Due to the merger, significant financial resources were

[82] When marginal costs are increasing, and firms can post-transaction cooperate to reduce these costs through costly innovation, the merged entity also has increased incentives to invest. Mergers generally increase the incentives to invest, when the price externality that the entities effectuate on each other is stronger than the innovation externality. See for example Denicolò, V. and Polo, M. (2021), "Mergers and innovation sharing", *Economics Letters*, 202 and Bourreau, M., Jullien, B. and Lefouili, Y. (2021), "Mergers and demand-enhancing innovation", *TSE Working Paper 18-907*. For instance, in a price-neutral merger, the effect of a merger on innovation occurs firstly through the demand expansion effect: the merger affects the entity's margins and therefore the incentives to innovate to increase demand. Secondly, through the innovation diversion effect: the merger affects the incentives to innovate as innovation of one product affects the demand and sales of the other. The incentive to innovate increases when the price diversion ratio is greater than the innovation diversion ratio, because the price externality firms exert on each other is stronger than the innovation externality. Hence, the merger induces enough gain in margins so that it leads to a demand expansion effect that is strong enough to offset any sales cannibalization of the other product due to innovation.

[83] Berk, J. and DeMarzo, P. *Corporate Finance* (Third ed.). Pearson, 2013.

[84] See M.8792 (T-Mobile NL / Tele2 NL), Commission Decision, paragraph 565.

released, which enabled the merged entity to offer better services and better value to customers, leading to an earlier and more extensive roll-out of 5G. This example illustrates how efficiencies can outweigh a concentration's induced upwards pricing pressure – even in "four-to-three" merger cases.

III.E. Out-of-market efficiencies

84. This subsection discusses out-of-market efficiencies, which should be receiving more attention than they currently are given their significant potential to benefit consumers. Notwithstanding the firm stance taken by the EC in their current practice in recognising the out-of-market efficiencies, the guidelines for applying Article 101(3) allow for a partial acceptance of such efficiencies, namely those accruing to the consumers who are allegedly harmed. Paragraph 43 of the 101(3) Guidelines states that, "*where two markets are related, efficiencies achieved on separate markets can be taken into account provided that the group of consumers affected by the restriction and benefiting from the efficiency gains are substantially the same*".

85. The EC has applied this standard in assessing the agreements amongst airlines (e.g., STAR Alliance). In paragraphs 60–61 of its Decision, the EC describes its assessment: in particular, it notes that "*[g]iven that the assessment takes into account only those out-of-market efficiencies that are enjoyed by the passengers who travel both on the Frankfurt-New York route of concern and related behind and beyond routes - while the out-of-market efficiencies enjoyed by the passengers on related behind and beyond routes, who do not travel on the route of concern, are disregarded – this assessment does not balance competitive harm to one customer group against benefits to another customer group*".[85]

86. This statement from the EC shows the main concern justifying the reluctance to accept out-of-market efficiencies. The EC merger enforcement avoids the policy question of wealth redistribution between customers potentially harmed and those who benefit from cooperation. Recognizing out-of-market efficiencies accruing only to customers potentially harmed may represent a step forward. However, it may be insignificant if the set of consumers benefitting from such efficiencies is relatively broad, as could be the case with environmental benefits.

87. Opening the door to out-of-market benefits in the balancing test would not be at odds with the consumer welfare standard pursued by the EU in its competition policy so far.[86] The

[85] Furthermore, AT.39595 (Continental / United / Lufthansa / Air Canada), Commission Decision, paragraphs 74–76, details the EC's assessment and acceptance of out-of-market efficiencies.

[86] See Albaek, S. (2013), "Consumer Welfare in EU Competition Policy", available at https://ec.europa.eu/dgs/competition/economist/consumer_welfare_2013_en.pdf .

consumer welfare standard implicitly mentioned in Article 101 of the TFEU does not exclude the consideration of a wider consumer pool in assessing the effects of a merger or an agreement. Article 101 only requires that agreements should allow "*consumers a fair share of the resulting benefit*".

88. The Horizontal mergers guidelines do not explicitly allow for the possibility opened by Article 101(3) Guidelines regarding the out-of-market efficiencies for the common consumers. However, paragraph 79 (emphasis added) states that efficiencies "*in principle, benefit consumers in those relevant markets where it is otherwise likely that competition concerns would occur.*" However, the "principle" should not exclude exceptions that may be well reasoned and make sense from the economic point of view.

89. The Dutch Competition Authorities (Autoriteit Consument & Markt, ACM) draft guidelines outline how sustainability agreements should be assessed and how they can offset restrictions of competition.[87] The ACM's approach for this assessment essentially follows the EC's key criteria for efficiencies assessment in mergers and agreements summarised in Section II.A: The consumers must receive a fair share of the benefits, any restriction of competition is kept to a minimum to achieve the benefits, and competition is sufficiently retained for the products affected. For any such agreement, the ACM will review and weigh the specific restrictions to competition and the benefits to consumers in order to decide whether the agreement is permissible or not. Importantly, the ACM notes that only objective benefits (i.e., benefits that are of clear value to the consumer), will be taken into account and that they should be quantified wherever data availability permits. The 2021 revision to the Austrian competition law has also provided for sustainability and environmental benefits to be considered in the assessment of agreements.[88]

90. Leaving aside the policy consideration of wealth redistribution, from the economic point of view, the less challenging part of assessing the out-of-market efficiencies is their quantification. Empirical techniques starting from simple surveys to more sophisticated valuation methods are available to estimate consumers' willingness to pay for certain non-monetary benefits such as sustainability, but by no means limited to it. Environmental

[87] ACM Draft Guidelines, Sustainability Agreements, Section 5, available at https://www.acm.nl/sites/default/files/documents/2020-07/sustainability-agreements%5B1%5D.pdf . In line with EC's framework, the ACM requires these benefits to be verified.

[88] See the Kartell- und Wettbewerbsrechts-Änderungsgesetz 2021 "KaWeRÄG2021", which adds to the Kartellgesetz 2005 – KartG 2005, BGBl. I Nr. 61/2005 in Section 3a, §2.1, "Consumers shall also have a fair share if the profit derived from the improvement of the production or distribution of goods or the promotion of technical or economic progress contributes significantly to an environmentally sustainable or climate-neutral economy".

economics tools are widely available and applicable to other areas. For a detailed list of methodologies, see Claici and Lutz (2021) on "How to quantify sustainability benefits".[89]

91. In the telecommunications sector, the vast consumer benefits observed outside the relevant market include environmental and digital spill-overs. Regarding the former, consumers can benefit as efficiencies entail several types of energy and resource savings due to the avoidance of network duplication. Such energy and resource savings can lead to, for example, a lessening of CO2 emissions and thus, to a reduction in adverse environmental effects. Regarding the latter, because of the increased availability of high-quality networks (e.g., due to the rollout of 5G technology), digital product providers such as providers of Internet of Things (IoT) and streaming services, or app developers in general, can rely on the existence of network capacities that will allow them to use increased bandwidths. In turn, this enables higher quality products and services, leading to improved user experience for both consumers that are affected by the concentration as well as those outside the market.

92. These benefits are of a high order of magnitude and contribute significantly to the EU Green Deal policies.[90] An opening towards the acceptance of the overall benefits from cooperation may provide further incentives for firms to align with the objectives of the EU environmental policies.

93. The EC is currently working to revise the Guidelines for horizontal cooperation agreements. The release of the draft sent for consultation on 1 March 2022 reveals a new chapter on the assessment of horizontal agreements pursuing sustainability objectives.[91] Notwithstanding the novelty of having specific guidance to assess both potential anti-competitive effects and benefits stemming from sustainability agreements, the proposed policy does not depart considerably from the current practice regarding the pool of consumers that can enjoy the benefits of an agreement. The Guidelines still only recognise in-market efficiencies stemming from sustainability agreements, in the same spirit as the current enforcement policy.

94. A possible opening towards a more lenient approach to cooperation that may be worth mentioning is the soft safe harbour offered by the new Guidelines in favour of sustainability agreements that may fall outside the scope of Article 101(1).[92] In general, if they are transparent, voluntary, open, non-discriminatory, not exchanging commercially sensitive

[89] See Claici, A. and Lutz, J. (2021), "Beyond the Policy Debate: How to Quantify Sustainability Benefits in Competition Cases?", European Competition and Regulatory Law Review, 5(3), p. 200.

[90] See EC, "A European Green Deal - Striving to be the first climate-neutral continent", available at https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en.

[91] See EC, "Draft Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements", Section 9.

[92] Ibid., paragraphs 572–574.

information and not leading to a significant increase in price or reduction of choice, sustainability agreements will not be assessed by the EC. A wide set of well-designed cooperation agreements that pursue sustainability goals may benefit from this safe harbour.

95. One additional remark in the new Guidelines may suggest that the EC is willing to adapt. Paragraph 608 states that the EC welcomes concrete cases in order to accumulate experience and provide further guidance. Under the condition that sustainability benefits are specific to a merger or an agreement and could not be achieved otherwise, there is no economic rationale for not accepting them to their full extent. Balancing broader benefits to society against potential harm to a group of consumers remains a political issue, which should be answered in light of the broader political ambition of environmental sustainability.

III.F. Dynamic considerations of expanding efficiency assessments

96. An effects-based assessment of efficiencies that is more accurate, and therefore more balanced, also has the potential to spur additional entry to or expansion in markets that are otherwise structurally relatively static. Particularly in infrastructure-heavy industries like the telecommunications sector, a firm's assets are likely to be valued higher by a firm insider than an outsider due to some degree of network complementarity. If potential entrants know *ex ante* that after entry it is unlikely their assets can be sold to those who value it most (i.e., industry insiders), then there will inevitably be a reduction in entry incentives.[93] This entry (and thus innovation) chilling effect is not new,[94] and in fact has been identified as a strong argument against tougher merger scrutiny of tech companies in the "killer acquisitions" debate.[95] Accordingly – in an industry such as the telecommunications sector, where market characteristics naturally tend towards concentration (due to the need for substantial investments and resulting high fixed costs) – allowing firms that for protracted periods of time have shown to be unable to catch-up to the market to exit by merging with a more efficient competitor can improve incentives to invest within the market and enable entry by more efficient competitors.

97. Whether a particular transaction is likely to remove a competitor that plays an important role in the dynamic competition of the market can be tested. The question that needs to be answered economically is whether the smaller player that is acquired is likely to catch up with the larger players in a reasonable time frame. If a firm's margins – with which the

[93] Bisceglia, M., Padilla, J., Perkins, J. and Piccolo, S. (2021), "Optimal Exit Policy with Uncertain Demand".

[94] Padilla, J., Reynolds, P. and Perkins, J. (2021), "Mobile market structure: policy and investment".

[95] Cunningham, C., Ederer, F. and Ma, S. (2021), "Killer Acquisitions", *Journal of Political Economy,* 129(3), pp. 649–702.

smaller player intends to catch up – are already relatively low (i.e., competition among the larger firms is strong), the incentive to pursue the substantial necessary investments to catch up in quality will also be low. This results in firms remaining on the competitive fringe and not evolving in their quality offerings to truly compete with the larger players in the market.

98. This was the case for E-Plus in Germany, where E-Plus had been unsuccessfully trying to catch up with the quality levels offered by the other competitors (Deutsche Telekom, Telefónica and Vodafone).[96] Tele2 found itself in a similar situation in the Netherlands: It was the fourth-largest player with a particularly low market share relative to the established competitors KPN and VodafoneZiggo, but was unable to induce significant competitive pressure on them.[97] In both instances, these fringe competitors stagnated in quality and customer numbers for protracted periods – unable to sufficiently invest to catch up – and were eventually taken over by one of their larger competitors (under substantial scrutiny of the EC and remedy requirements).

99. In practice, the reasonable time frame for catching up could initially be defined as one technology cycle, as anything beyond may be too speculative. Concretely, the question to answer then could be whether within the next technology cycle, the firm is likely to have materially progressed in catching up with the quality levels offered by the larger players in the market. As this exercise is forward-looking and thus hypothetical, inferences will need to first be drawn from the past. The motivation for the transaction could therefore show that the smaller party to the transaction has, within the current technological cycle, not been able to invest significantly in quality improvements and, as a result, not achieved significant gains in market share. Looking forward, the submission of the parties could show whether there exist plans to invest substantially in the future technology cycle and what the business expects those investments will improve in terms of competitive position.

100. To quantify the unlikeliness of the smaller player catching up, it may also be useful to provide a back-of-the-envelope calculation for the competition authorities that identifies the investment incentives (or lack thereof) mentioned earlier. Given certain plausible assumptions on critical parameters (e.g., the margins of the firms that are ahead in quality, the cost of the investment needed to bridge that quality gap, and the resulting market share if that gap were bridged), this would allow identifying whether the firm is likely able and willing to invest the necessary funds to remain sustainably competitive.

[96] M.7018 (Telefónica Deutschland / E-Plus), Commission Decision, paragraph 142.

[97] M.8792 (T-Mobile NL / Tele2 NL), Commission Decision, paragraph 565.

IV. Conclusion

101. In this report we set out economic principles that apply to the efficiency claims and assessments in agreements and mergers in the telecommunications industry and that are capable of overcoming certain limitations in the current enforcement practice.

102. First, this report shows that the practice sometimes contradicts accepted economic principles that serve as the motivating guidelines in other established aspects of competition policy (such as motivating access remedies or the support for co-investment projects). It also shows that this can be solved by using existing economic tools for a more accurate assessment. Secondly, this report shows that such an adjustment would be unlikely to result in an overly lenient policy. Those transactions where a more in-depth assessment of efficiencies is likely to change outcomes are precisely those where there may be sufficiently large benefits that outweigh the potential harm and thus provide a net benefit to consumers.

103. As a consequence, this report suggests the acceptance of a number of broader efficiency arguments:

- First, efficiency claims should not be rejected simply based on the incorrect assertion that they could be achieved by a less restrictive NSA. This report shows that certain market characteristics may make the conclusion of such NSAs unlikely, in which case the counterfactual of an NSA is not appropriate.

- Second, the EC is generally reluctant to accept efficiencies that are expected to materialise after four years of a merger, irrespective of industry specificities. This report shows that this may hinder consumers from benefitting from pro-competitive effects of a merger due to an inappropriate focus on short-term effects.

- Third, this report shows there is no reason why non-price efficiencies, such as network quality improvements, could not be successfully claimed – despite the historical lack of success. For instance, where loosening financial constraints enables investments that could not have been made absent a merger, non-price efficiencies can be quantified and should thus find consideration in the assessment of the competitive effects.

104. In this report, we provide guidance on how to make these efficiency claims credible. We believe that the current legal framework to assess efficiencies is sufficiently flexible to accommodate broader efficiency claims – subject to the EC and the merging parties (or parties to the agreement) jointly developing their assessment tools and arguments further.

Appendix A: Phase II merger reviews

105. This appendix provides short summaries of all Phase II decisions by the EC in the mobile telecommunications sector in which efficiency claims were made within the last 20 years.[98]

A.1 M.3916 – T-Mobile Austria / Tele.ring

106. In 2005, T-Mobile Austria proposed acquiring control over its Austrian competitor Tele.ring. At the time of the proposition, T-Mobile Austria was the second-largest mobile network operator with a market share of 20–30% and Tele.ring the third largest with a market share of 10–20%. The market included Mobilkom (Telekom Austria), One, and H3G, three other significant players.[99] Both T-Mobile Austria and Tele.ring provided mobile and fixed telephony services in Austria and held licenses from the Austrian telecommunications regulator to operate 2G/GSM networks, fixed telephony networks and 3G/UMTS networks with distinct frequency spectra.

107. The EC cleared the transaction in 2006, subject to conditions and obligations. The main concern of the EC regarding the proposed acquisition was that an increased concentration in the Austrian retail market for the provision of mobile telephony services could impede competition and, thereby, harm consumers. Moreover, Tele.ring was considered a "maverick" with a significant competitive impact in the market. Ultimately, the EC's concerns were alleviated by the parties' commitments to divest UMTS frequencies and mobile telephony sites of Tele.ring to competitors with low market shares

108. For more details on the case, see the full decision text.[100]

A.2 M.6497 – Hutchison 3G Austria / Orange Austria

109. In May 2012, Hutchison 3G Austria (H3G) proposed acquiring Styrol Holding I GmbH and its wholly-owned subsidiary Orange Austria Telecommunications GmbH without its brand

[98] Leber, M. (2018), "Dynamische Effizienzen in der EU-Fusionskontrolle", p. 158.

[99] Ibid., p. 159.

[100] Available at https://ec.europa.eu/competition/mergers/cases/decisions/m3916_20060426_20600_en.pdf .

"Yesss!" At the time of the proposition, H3G was the fourth-largest mobile network operator with a market share of 5–10% and Orange (Styrol) the third-largest with 10–20%. The market included A1 (Telekom Austria) and T-Mobile, two other major players.[101]

110. In December 2012, the EC cleared the proposed acquisition of Orange Austria by H3G subject to conditions and obligations. The EC had concerns that a merger of the highly concentrated network operators market in Austria would lead to less competition and higher prices, which would put consumers at a disadvantage. To address these concerns, the EC's approval was subject to commitment packages aiming to facilitate the entry of new players into the market. The commitments included the divestment of radio spectrum and related rights by H3G to provide wholesale access to its network.

111. For more details on the case, see the full decision text.[102]

A.3 M.6992 – Hutchison 3G UK / Telefónica Ireland

112. In October 2013, Hutchison 3G UK Holdings Limited proposed the acquisition of O2 (Telefónica Ireland). At the time of the proposition, Three (Hutchison) was the fourth-largest mobile network operator with a market share of 10% and O2 the second largest with a market share of 28%. The market included Vodafone and Eircom, two other major players.[103]

113. In May 2014, the EC cleared the acquisition subject to conditions and obligations. The EC had concerns that further concentration on the mobile telecommunications sector would impede competition and thereby harm customers. To alleviate concerns, H3G committed to ensuring the entrance of two mobile virtual network operators, with one of them potentially becoming a full mobile network operator by acquiring spectrum at a later stage. Moreover, H3G committed to ensuring Eircom stays a competitive force by continuing the NSA between O2 and Eircom.

114. For more details on the case, see the full decision text.[104]

[101] Leber, M. (2018), "Dynamische Effizienzen in der EU-Fusionskontrolle", p. 162-163.

[102] Available at https://ec.europa.eu/competition/mergers/cases/decisions/m6497_20121212_20600_3210969_EN.pdf .

[103] Leber, M. (2018), "Dynamische Effizienzen in der EU-Fusionskontrolle", p. 170.

[104] Available at https://ec.europa.eu/competition/mergers/cases/decisions/m6992_20140528_20600_4004267_EN.pdf .

A.4 M.7018 – Telefónica Deutschland / E-Plus

115. In October 2013, Telefónica Germany proposed acquiring control over E-Plus. Telefónica provided wireless telecommunications services under its core brand "O2", fixed-line telecommunications services and wholesale network access to third parties in Germany; while E-Plus provided wireless telecommunications services under its core brands E-Plus and BASE as well as wholesale network access to third parties in Germany. At the time of the proposition, Telefónica and E-Plus were the third- and fourth-largest mobile network operators with 10–20% market shares, respectively. The market included Deutsche Telekom and Vodafone, two other major players. [105]

116. In July 2014, the EC cleared the proposed merger subject to conditions and obligations. The EC had concerns that the merger would remove two close competitors from the German mobile communications market and thereby impede competition and weaken the position of mobile virtual network operators to the disadvantage of consumers. To address these concerns, Telefónica submitted a commitment package to ensure the entrance of new competitors and the strengthening of existing competitors. In particular, Telefónica ensured the short-term entrance or expansion of one or several mobile virtual network operators by selling 30% of the merged company's network capacity. Moreover, Telefónica committed to selling radio wave spectrum and other assets to either a new mobile network operator or a mobile virtual network operator that acquired part of the network capacity. Telefónica also committed to extending existing wholesale agreements.

117. For more details on the case, see the full decision text.[106]

A.5 M.7612 – Hutchison 3G / Telefónica UK

118. In September 2015, CK Hutchinson Holdings Limited (CKHH) proposed the acquisition of Telefónica Europe Plc through its indirect subsidiary Hutchinson 3G Investment Limited (H3GI). Hutchinson 3G UK Limited (Three) was a wholly-owned indirect subsidiary of CKHH and operated as a mobile network operator in the UK, offering mobile telecommunications services. O2 offered telecommunication services in the UK market. It belonged to Telefónica SA, the holding company of a group of companies operating fixed and mobile communication networks. At the time of the proposition, Three (Hutchison) was the fourth-largest mobile network operator with a market share of 10–20%, and O2 (Telefónica) had

[105] Leber, M. (2018), "Dynamische Effizienzen in der EU-Fusionskontrolle", p. 179.

[106] Available at https://ec.europa.eu/competition/mergers/cases/decisions/m7018_6053_3.pdf .

the third-largest market share of 20–30%. The market included Vodafone and Everything Everywhere (EE, a JV of T-Mobile and Orange), two other significant players.[107]

119. In 2016, the EC prohibited the transaction. The EC argued that the proposed merger would have reduced the number of competitors from four to three, likely resulting in higher prices and less choice for consumers. Moreover, the EC stated that the merger would likely have reduced the quality of service as well as the number of mobile network operators willing to host other operators on their network.

120. For more details on the case, see the full decision text.[108]

A.6 M.7758 – Hutchison 3G Italy / Wind / JV

121. Hutchison 3G Italy (H3G) was an indirectly wholly-owned subsidiary of Hutchison and operated as a mobile network operator in Italy, offering telecommunications services under its brand 3. Wind was an indirectly wholly-owned subsidiary of VimpelCom and active as a mobile network operator in Italy, offering mobile telecommunication services. In 2016, the parties notified that they planned to combine their Italian businesses through a JV under joint control. At the time of the proposition, H3G (Hutchison) was the fourth-largest mobile network operator with a market share of 10–20% and Wind (VimpelCom) the third largest with a market share of 20–30%. The market included Vodafone and TIM (Telecom Italia), two other major players.[109]

122. In 2016, the EC approved the JV subject to conditions and obligations. The EC argued that the JV would have resulted in the largest mobile network operator on the Italian market and, as both companies were considered to be strong competitive forces before the transaction, that competition would likely be impeded: according to the assessment, the JV would have led to a market with three MNOs with similar market shares and a reduction of market participants willing to host virtual network operators. The parties' commitments included divesting activities that would allow a new operator to enter the market. The EC obliged the parties to divest mobile radio spectrums from different frequency bands, transfer or allow collocation at several thousand mobile base station sites, and allow Iliad, the French telecommunications operator approved as the buyer of the assets to be disposed, to use the JV's network.

123. For more details on the case, see the full decision text.[110]

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[107] Leber, M. (2018), "Dynamische Effizienzen in der EU-Fusionskontrolle", p. 190.

[108] Available at https://ec.europa.eu/competition/mergers/cases/decisions/m7612_6555_3.pdf .

[109] Leber, M. (2018), "Dynamische Effizienzen in der EU-Fusionskontrolle", p. 197.

[110] Available at https://ec.europa.eu/competition/mergers/cases/decisions/m7758_2937_3.pdf .

A.7 M.8792 – T-Mobile NL / Tele2 NL

124. T-Mobile NL and Tele2 NL were both mobile and fixed network infrastructure operators in the Netherlands. They provided fixed and mobile telecommunications services to private and business customers as well as wholesale services. In June 2018, T-Mobile NL proposed to acquire Tele2 NL. At the time of the proposition, T-Mobile NL was the third-largest mobile network operator with a retail mobile telecommunication market share of 10–20% in terms of subscribers, and Tele2 NL was the fourth-largest with 5–10% market share.[111] The market additionally included KPN and VodafoneZiggo (JV of Liberty Global and Vodafone), two other major players.

125. In 2018, the EC cleared the proposed acquisition unconditionally. It argued that the transaction did not have the potential to impede competition in the telecommunications services market in the Netherlands as the limited combined market share increase from about 20 to about 25% was unlikely to lead to price increases. Moreover, the EC did not consider Tele2 NL a significant competitive force in the overall market. The EC further argued that coordinated behaviour would be unlikely to occur due to the different business strategies of the remaining competitors. The conditions for virtual mobile network operators would also not have been affected by the transaction.

126. For more details on the case, see the full decision text.[112]

[111] See Case M.8792 (T-Mobile NL / Tele2 NL), paragraph 372.

[112] Available at https://ec.europa.eu/competition/mergers/cases/decisions/m8792_3403_11.pdf .