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# Measuring unilateral price increases in the UK and EU due to mergers in differentiated markets: Are the tools fit for purpose?

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## Introduction

In many merger cases, the core competition concern is that the loss of rivalry between two merging competitors may render it profitable for the merged business to unilaterally worsen its offer by raising prices, or reducing quality, range or service. Competition authorities frequently use merger control tools (such as diversion ratios, price indices and merger simulation) to assess the closeness of competition between rivals. However, are these merger control tools, which have evolved over time, still fit for purpose in 2022?

Whilst unilateral effects can arise in other market contexts (such as in homogeneous goods where firms mainly compete on the supply side in terms of costs and capacity), in practice unilateral effects most often arise in differentiated goods/services markets. Such differentiation can arise due to differences in product characteristics (i.e. differences in objective product features, but also due to more intangible matters such as brand image), and/or by geography (where customers travel to nearby retailers/wholesalers or service providers, or suppliers make deliveries to local customers).

In differentiated markets, it may be difficult for the merging parties to assess whether their merger is likely to be viewed as anti-competitive. This is because there may be no clear product or geographic boundaries to the relevant market and, however the market is defined, market shares may not capture the closeness of competition between different suppliers. For example, if the market is defined broadly to include various differentiated alternatives, then market shares may understate the rivalry between the parties. However, if the market is defined narrowly, then market shares may fail to capture the strength of competition from other rivals. This point is explicitly recognised in the Competition and Markets Authority's ("CMA") Merger Assessment Guidelines of 2021:

*"In many cases, especially those involving differentiated products, there is often no 'bright line' that can or should be drawn. Rather, it can be more helpful to describe the constraint posed by different categories of product or supplier as sitting on a continuum between 'strong' and 'weak'."*<sup>1</sup>

Consequently, merger control tools in differentiated markets have increasingly focused on how a merger between rivals may create an incentive to increase prices or otherwise worsen their offer. In particular, firms may be close competitors, depending on the extent to which they win/lose sales between one another when they vary their prices (which may be measured using diversion ratios), and the loss of this rivalry may create an incentive for the merged firm to increase the parties' prices (which depend on gross profit margins as well as diversion ratios, which can be combined together in simple pricing indices that focus on incentives rather than price effects). Merger simulation takes this further by estimating

actual price increases, but these estimates depend on additional data and assumptions. On the other hand, mergers between competitors may generate efficiencies that may offset any anti-competitive incentives to increase prices.

As emphasised above, in differentiated markets, customer demand-side behaviour is of particular importance to assessing the risk of the merged business having unilateral incentives to worsen its offer.<sup>2</sup> However, as a spoiler, the three case studies presented in this chapter illustrate how supply-side factors need to be considered alongside information on demand-side constraints to assess overall competitive effects, even where barriers to entry and expansion are high:<sup>3</sup>

- In *Bottomline Technologies (DE), INC/Experian Limited Merger* (2020), the CMA cleared the merger unconditionally despite the parties' high combined market shares. This decision rested on the existence of clear evidence that Experian's Payment Gateway product was a weak competitor (as it had not received investment or been actively promoted), and that the parties were not close competitors.
- In *T-Mobile NL/Tele2 NL Merger* (2018), the European Commission (the "Commission") cleared the merger unconditionally as the parties' static incentives to increase prices were modest and one of the merging parties was in decline. This was not a failing firm case, but a case where the merger counterfactual of declining rivalry was important to the clearance decision. In short, this case illustrates that supply-side competitive dynamics still matter in differentiated markets.
- In *FCA/PSA* (2020), the Commission reached an adverse finding in relation to the parties' overlapping businesses in the supply of light commercial vehicles ("LCVs") in various countries where the parties were close competitors, having regard to both national market shares and analysis of the closeness of competition. The Commission also considered supply-side factors, including whether merger efficiencies may provide off-setting incentives, and the relevance of market share volatility and overall European market shares (rather than purely market shares in individual Member States). Supply-side factors were also relevant to assessing appropriate remedies, with the Commission accepting two targeted remedies, which required the merged business to improve the competitiveness of a rival (Toyota) through an extension of an existing cooperation agreement, and to allow rivals to expand by accessing PSA's/FCA's repair and maintenance networks.

The remainder of this chapter is divided into three parts:

- (a) Section 2 provides an overview of the main quantitative tools that European competition authorities<sup>4</sup> have used to assess the merging firms' incentives to increase prices or otherwise worsen their offer in differentiated markets, namely diversion ratios, upward pricing pressure ("UPP") indices and merger simulations. This section draws particularly on two recent academic articles by Valletti and Zenger<sup>5</sup> and Miller and Sheu,<sup>6</sup> covering the main tools used and their advantages and limitations.
- (b) Section 3 then presents three case studies highlighting how the Commission and CMA have applied these tools in practice, and the relevance of other factors to their conclusions.
- (c) Section 4 concludes, including highlighting the key lessons for practitioners and parties contemplating mergers, and answering the titular question of whether the tools are still fit for purpose.

## Overview of different merger control analyses

This section provides an overview of the different quantitative tools competition authorities use to assess the closeness of competition between rival suppliers and their static incentives

to worsen their offer, including diversion ratios, UPP tests, and merger simulation. Each sub-section summarises the methodology and the underlying evidence required, as well as the advantages and limitations with each tool.

### Diversion ratios

Diversion ratios measure the degree of substitution between products, providing insight on the degree of competition between two firms. A diversion ratio is the proportion of sales or revenues that are captured by firm 2, when firm 1 raises price (or reduces quality, range or service – or ceases business). If a diversion ratio is high, two firms (or products) are close substitutes and may exercise a strong competitive constraint on each other.

The intuition is that if one firm increases its prices, customers would largely switch to their closest competitors. If there is high diversion between two merging firms, then post-merger the parties will internalise/capture the revenue that would have otherwise diverted to a rival. All else equal, this may increase their incentive to raise prices or otherwise reduce quality, range or service post-merger. If diversion is low, firms (or products) are less likely to be close substitutes, and a price increase is unlikely to generate high diversion to the rival firm. Therefore, in the context of a merger, diversion ratios may provide insight for competition authorities when both defining the relevant market (both product and geographic dimensions) and estimating potential price effects.

Valletti and Zenger note that diversion ratios can be calculated using the following evidence:<sup>7</sup>

- (a) Switching data: sales data from different firms in a market can be used to understand switching patterns following changes in price (e.g. temporary promotions). In some markets, this data may be straightforward to interpret, but firms' sales might be influenced by a variety of other factors such that the impact of price changes may be difficult to isolate, and some changes in purchasing patterns may reflect changes in customers' requirements, rather than changes in firms' relative prices.
- (b) Bidding data: the number and identities of firms that participate in bids, and which firms win or lose these bids, can indicate which firms are close competitors. However, this information may not be available to individual competitors, or only be partially available.
- (c) Customer surveys: competition authorities or merging parties may conduct surveys to assess the closeness of different products, by asking hypothetical questions on how consumers would react following an increase in price or a temporary closure of a firm or local store. This approach helps competition authorities understand hypothetical demand patterns following a price increase/change in the market or if a product/outlet ceases to be available. However, these questions are hypothetical and stated preferences may substantially differ from revealed preferences – i.e. what consumers would actually do in practice.
- (d) Event studies: competition authorities may investigate consumers' actual reactions to a temporary shutdown of a plant or a store, providing insight on the second-best choice available. However, this type of analysis will capture diversion for all customers, rather than the diversion for marginal, price-sensitive customers that one wishes to measure.
- (e) Demand estimation: based on the parties' sales data, diversion ratios can be derived using the estimated own- and cross-price elasticities. If products are close substitutes, their prices will likely be strongly correlated, and their diversion ratios should be high. However, this analysis may be complex, and requires further data and assumptions.

Where multiple approaches or data sources are available, it is important to consider which is likely to be the most accurate/robust measure of actual diversion and the extent of any sensitivities.

Using the evidence described above, diversion ratios between product  $j$  and  $k$ ,  $D_{jk}$  can be derived using the following formula:<sup>8</sup>

$$D_{jk} = - \left( \frac{\partial Q_k / \partial p_j}{\partial Q_j / \partial p_j} \right)$$

Where  $\partial Q_k / \partial p_j$  is the change in the demanded quantity for product  $k$  following a change in the price of product  $j$ , and  $\partial Q_j / \partial p_j$  is the change in the demand for product  $j$  following its own price increase (i.e. the proportion of sales volumes lost by firm  $j$  due to an increase in its price that would be won by firm  $k$ ).

Diversion ratios have several advantages when assessing substitution relative to relying mainly on market shares to assess the relative competitive importance of different suppliers. First, they do not require one to define the market beforehand, whereas a market share approach may exclude potentially relevant products from the market (and *vice versa*).<sup>9</sup>

Second, diversion ratios capture the degree of substitution between two products, while market shares do not.<sup>10</sup> A market share approach disregards the degree of competition within a predetermined market, whereas diversion ratios directly measure how much the two products exercise competitive constraints on each other.

One use of diversion ratios is to compare whether firms are closer or more distant competitors than would be suggested by simple market share comparisons. For example, if two firms each have a 20% market share, and their market shares are a reasonable guide to the closeness of competition between them, then one would expect the diversion ratios between these firms to be approximately 25% (20%/80% = 25%).<sup>11</sup> However, if the diversion ratios between each of them were to be 15%, then this would suggest that each of their implied shares would be 13.0% and a combined implied share of only 26%.<sup>12</sup>

For these reasons, competition authorities often place weight on diversion ratios as part of their assessment in differentiated markets. For example, the current U.S. Horizontal Merger Guidelines (2010) note that: “*Diversion ratios between products sold by one merging firm and products sold by the other merging firm can be very informative for assessing unilateral price effects.*”<sup>13</sup>

However, diversion ratios do not capture how competitive the overall market is, a factor that the CMA and Commission typically reflect on as part of the merger control assessment. As explained by Valletti and Zenger (2021), “*even if the merging firms are significant alternatives for their respective customers, anticompetitive effects may not arise if the competitive pressure that is exercised by other firms is sufficiently strong.*”<sup>14</sup>

### Upward Pricing Pressure tests

The Commission and CMA also often rely on UPP, which captures both the intensity of competition in a market (in terms of gross profit margins) and the closeness of competition. The UPP approach focuses on the merging parties’ incentives to avoid sales cannibalisation post-merger. As described by Valletti and Zenger, “*post-transaction, merging firms will take this ‘cost of competing’ into account and thus act less aggressively.*”<sup>15</sup>

The UPP of firm 1,  $UPP_1$ , is calculated as follows:<sup>16</sup>

$$UPP_1 = D_{12}(P_2 - C_2)$$

where  $D_{12}$  is the diversion ratio between firm 1 and firm 2, and  $(P_2 - C_2)$  is firm's 2 gross profit margin on each unit. This formula can be interpreted as the likelihood of "stealing" a sale from firm 2 multiplied by the "financial damage of a lost unit of output" for firm 2.<sup>17</sup> This financial damage is often expressed as a percentage of price. This measure, the Gross Upward Pricing Pressure index ("GUPPI"), is derived by Salop and Morsci (2009) as follows:<sup>18</sup>

$$GUPPI_1 = \frac{UPP_1}{P_1} = D_{12} M_2 \frac{P_2}{P_1}$$

where  $M_2$  is the percentage margin of product 2, i.e.  $(P_2 - C_2)/P_2$ . Hence, the estimated unilateral effects are driven by: (i) the closeness of competition, as measured by the diversion ratio; (ii) the merging rival's gross margin; and (iii) the relative prices of the two products.<sup>19</sup> This second factor can therefore capture the intensity of competition or change in pricing incentives, which diversion ratios alone cannot. Moreover, computing the GUPPI requires information that is often available in the context of a merger (e.g. from customer surveys and the various sources highlighted in the previous sub-section), and it is interpretable as "the pre-merger tax that would generate post-merger prices".<sup>20</sup>

Assessing gross margins requires good data on the variable costs of individual products (i.e. distinguishing between fixed costs that do not vary with output and variable costs that do), and the time period over which this should be assessed (also considering the period over which prices are fixed). In addition, in markets where demand is growing, the additional fixed costs that are incurred to meet growing demand may also be avoidable.

However, the GUPPI and UPP do not capture the post-merger "feedback" effects. Such feedback effects may arise as, if one of the merging firms raises prices, the other merger party and other firms may respond by also increasing their prices.<sup>21</sup> For this reason, the GUPPI and UPP may be conservative. In addition, the GUPPI/UPP does not indicate how this change in incentives would be passed through into price increases, which depends on the nature of customer demand and specifically how consumer price sensitivity (or more technically, price elasticity) varies as prices increase.<sup>22</sup>

Miller and Sheu observe that some economists argue that UPP can be multiplied by 0.5 to obtain a price prediction, based on this being the cost pass-through of a monopolist facing linear demand. However, they argue that this may understate price effects due to the feedback effects associated with the merging parties increasing prices, and pass-through can be higher than that suggested by linear demand. They cite the analysis of Miller *et al.* (2017), which indicates that UPP approximates merger price effects "reasonably well" for linear demand, and will understate price effects if demand is Almost Ideal (another commonly adopted demand assumption) or log-linear.<sup>23</sup>

### Compensating Marginal Cost Reductions

Werden (1996) provides another estimate of unilateral effects<sup>24</sup> that accounts for feedback effects between the merging parties, referred to as Compensating Marginal Cost Reductions ("CMCRs"). This metric can be interpreted as the subsidy level, or efficiencies, that are required to mitigate or offset any price increase that is caused by the merger.<sup>25</sup>

CMCRs can be calculated as follows:<sup>26</sup>

$$CMCR_1 = \frac{D_{12} M_2 \frac{P_2}{P_1} + D_{12} D_{21} M_1}{1 - D_{12} D_{21}}$$

Where  $D_{12}M_2\frac{P_2}{P_1}$  is the  $GUPPI_1$  and, to quote Valletti and Zenger,  $D_{12}D_{21}M_1$ , represents the “*first-round feedback effect from firm 2*” and  $1 - D_{12}D_{21}$ , the denominator, captures the “*higher-order iterations of feedback effects between firms 1 and 2*”.<sup>27</sup> Hence, Valletti and Zenger indicate that CMCRs “*measure the size of marginal cost efficiencies that would be necessary to offset the upward pricing pressure that is caused by a merger*”.<sup>28</sup> As such, CMCRs account for post-merger feedback effects between the merging firms and do not require any further assumptions to be made as to the nature of customer demand. This tool also has the benefit of accounting for post-merger cost efficiencies, as well as product quality improvements (Willig, 2011).<sup>29</sup>

As with the GUPPI, CMCRs are easily interpretable, and their calculation requires data that may be available provided that diversion ratios and gross profits margins can be measured with some degree of accuracy. However, this measure does not depend on pass-through, as it calculates the point where efficiencies and the UPP cancel out.

### Merger simulation

Competition authorities may also use merger simulations to predict the post-merger equilibrium. There are multiple modelling approaches. Valletti and Zenger describe two main approaches, namely calibrated merger simulations and simulations based on demand estimation.

Calibrated merger simulations use similar information to pricing pressure tools, namely market shares, diversion ratios and gross margins. Jaffe and Weyl (2013) developed the first-order approach (“FOA”),<sup>30</sup> which uses pre-merger data to calibrate the model and linearly approximate the unilateral price effects post-merger. The FOA produces robust results according to Miller *et al.* (2016), based on Monte Carlo simulations, provided that “*the utilized local measures of pass-through are sufficiently precise*” (i.e. the estimated pass-through rates are reasonably accurate).<sup>31</sup>

However, this approach requires extensive data, especially on pass-through rates, which requires strong assumptions to be made regarding how customer price sensitivity varies as price increases. Valletti and Zenger indicate that the Commission often uses a linear demand form, implying smaller predicted effects than other demand curvature assumptions.<sup>32</sup> The UK Office of Fair Trading and Competition Commission (the CMA’s predecessors) adopted a simple form of the linear and isoelastic demand calibration, Indicative Price Rise (“IPR”), for a number of mergers in the 2000s.

Nonetheless, Valletti and Zenger observe that IPRs do not capture “*feedback effects between the prices of the merging parties and the prices of outsiders*”.<sup>33</sup> To overcome this limitation, the Commission often uses a full linear simulation, which only requires information on UPP, margins and market shares. Moreover, the UK competition authorities have also used isoelastic demand in its simulation in the context of mergers between grocery retailers, which in their view best reflects the curvature of demand. Valletti and Zenger explain that simulating a model based on both linear and isoelastic demand can provide a useful lower and upper bound, respectively, of the likely price effects.<sup>34</sup>

Alternatively, competition authorities may also perform merger simulations based on demand estimation. This approach does not impose restrictions on demand curvature, and allows an econometric test of specific demand forms. Accordingly, the Commission has followed this approach on several occasions, using nested logit models, for mergers in fast-moving consumer goods and mobile telephony markets.<sup>35</sup> Nonetheless, this approach requires very granular data, which is not available in the context of merger control for most markets.

### Conclusions: Thresholds, efficiencies, and supply-side factors

Multiple tools are available to competition authorities to assess the likely unilateral price effects from mergers in differentiated markets, which rely on measuring their main inputs



accurately and the validity of their underlying assumptions. Nonetheless, there are limitations to all these quantitative tools, which affects their appropriate use and interpretation. For example, Miller and Sheu emphasise that:

*“Perhaps ironically, one thing that quantitative modeling does not typically accomplish is a precise quantification of merger effects. Models by their nature are simplified representations of the world. Their purpose is to isolate the most important ways that mergers affect economic incentives, and they need not account for secondary and tertiary details.*

*“Furthermore, as parametric assumptions are necessary to make predictions, some uncertainty is inevitable. Thus, our view is that modeling should not be expected to provide precise estimates of merger effects, but rather should be used to assess countervailing forces and provide an overall sense of magnitudes.”*

The reason for emphasising this point is that any modelling needs to consider data uncertainties and whether the results rest on assumptions (and whether these assumptions can be tested). Accordingly, competition authorities and the merging parties should employ sensitivity testing to weigh up countervailing forces. Moreover, demand-side-based tools are inherently static, and thus supply-side factors may also be highly relevant.

However, all of these approaches will predict that mergers between competitors will lead to some price increase, because there will be some diversion between rivals (or else they would not be rivals) and firms need to earn positive gross margins in order to contribute to their fixed costs and earn profits. As a consequence, UPP, the GUPPI, IPRs and merger simulations will always predict that a merger between competitors will lead to price increases, absent offsetting efficiencies.

Accordingly, the substantive issue is whether any anti-competitive effects are likely to be small with limited harm to customers (rather than certain small price increases somehow being acceptable), or whether there are sufficient offsetting efficiencies (again, such that any anti-competitive effects are not likely to be appreciable).

The next section describes how the CMA and Commission have applied these tools in three illustrative cases, depending on the available evidence and specificities of each industry and how supply-side factors have influenced their conclusions.

## Case studies

### *Bottomline Technologies (DE), INC/Experian Limited Merger*

The merger between Bottomline UK and Experian Payments Gateway (“EPG”) involved two firms that provided payment software that *“facilitates the submission of batch payments to Bacs via Bacstel-IP and to Faster Payments Services via Secure-IP”* (collectively, “Bacs Approved Software”) to end users and banks.<sup>36</sup> Businesses can either buy a software licence to submit Bacs and Faster Payments Direct Corporate Access (“FPS DCA”) payments, or they can use a “bureau” or “facilities managed direct debit” (“FM DD”) provider to make submissions on their behalf.<sup>37</sup>

As part of its Phase 2 investigation, the CMA investigated two theories of harm:

- (a) horizontal unilateral effects in the supply of payment software for submissions to Bacs via Bacstel-IP and FPS DCA via Secure-IP in the United Kingdom; and
- (b) a loss of potential competition in the supply of a wider range of payment software and solutions in the United Kingdom.<sup>38</sup> However, the CMA rejected this theory of harm based on its view that, absent the merger, pre-existing market conditions would have broadly prevailed and there was no evidence that the parties’ customers were likely to demand a broader suite of payment products.<sup>39</sup>

The CMA found that the Bacs Approved Software market was highly concentrated, and the merging parties would have a combined share of 70–90%, based on 2014–2019 volumes, with Bottomline accounting for 40–50% and EPG for 20–40%.<sup>40</sup> The combined market shares would decrease to 40–60% if volumes from bureaux were included.<sup>41</sup> The Bacs Approved Software market was also highly concentrated based on 2018 revenues shares, where the parties accounted for 70–80%, with an increment of 10–20%.<sup>42</sup>

Such market shares would normally suggest that the merger raised material competition concerns. What is striking about this case is that the merger was nevertheless cleared unconditionally. This is because the CMA’s competition concerns were addressed by considering whether EPG is an effective competitor currently, and an analysis of whether the parties are close competitors. The CMA concluded that EPG’s high market share largely reflected its historical competitive position, but it was now only a weak competitor as Experian had not invested in EPG or actively promoted EPG. The CMA also concluded that EPG’s competitive strategy would have been broadly similar if the alternative purchaser identified by the CMA had acquired EPG instead.<sup>43</sup>

To investigate further the likelihood of anti-competitive unilateral effects, the CMA considered two sources of switching evidence:

- (a) contract data: the CMA estimated the number of customers who switched between merging parties and their associated value. This data also, but less reliably, provided insight on customers who switched to third parties; and
- (b) Vocalink data: which estimated the number and volume of transactions of service user numbers (“SUNs”) that have switched both between the parties and to third-party suppliers of Bacs Approved Software, bureaux and FM DDs.<sup>44</sup>

The CMA then calculated diversion ratios based on both the contract data and the Vocalink data to investigate the unilateral effects post-merger. The CMA calculated the “*proportion of customers (or value / volume of transactions) that have switched to different providers in the past*”.<sup>45</sup> The CMA produced results weighted by revenues for the contract data and volume for the Vocalink data. In the CMA’s conclusions, it acknowledged that the sample of customers switching away from EPG was much smaller than those switching away from Bottomline.<sup>46</sup> Using the Vocalink data, the CMA calculated diversion ratios from Bottomline to EPG of between 0–5% based on customers, and 5–10% based on volumes. The CMA provided a broader range when estimating the diversion from EPG to Bottomline: 20–30% based on customers; but only 0–5% based on volume.<sup>47</sup>

One of the parties, Bottomline, also submitted switching analyses based on their contract data, as well as calculating diversion ratios based on number of customers and revenues. The CMA found that these estimates were relevant for its assessment, concluding that:

- (a) EPG did not exert strong competitive pressure on Bottomline, supported by weighted diversion ratios of between 5–10%,<sup>48</sup> and
- (b) Bottomline exerted some competitive pressure on EPG, supported by weighted diversion ratios of 10–20% based on value (only 0–5% based on volumes). However, these numbers were smaller than expected given Bottomline’s market share, and hence the CMA concluded that “*Bottomline is not a close competitor to EPG*”.<sup>49</sup>

The CMA also investigated diversion towards other Bacs Approved Software supplier options. Based on the Vocalink volumes data, the CMA concluded that there were other market players that exert a strong competitive constraint on Bottomline, and EPG was only the fifth-strongest competitor to Bottomline. The CMA reported the top EPG competitors

rather than direct diversion ratios to estimate diversion from EPG, given the low number of switching customers in the Vocalink data. Bottomline was only the eighth-strongest competitor on this basis.

Bottomline submitted an alternative analysis to investigate switching patterns towards third parties. Bottomline's submission reported the main competitors, where their customers switch to, based on the number of customers and revenue reported in the contract data. Their analysis found that EPG captures the lowest proportion of customers switching away from Bottomline, compared to their competitors.<sup>50</sup> The CMA therefore concluded that these diversion ratio estimates are consistent with the ones calculated from the Vocalink data.

Finally, Bottomline also argued that out-of-market channels exerted some competitive constraint. In particular, Bottomline estimated that diversion ratios to Bureaux and FM DD providers were larger than towards EPG, and these out-of-market competitors captured specifically large customers.<sup>51</sup>

Given the above points, the CMA cleared the merger unconditionally.<sup>52</sup>

### T-Mobile NL/Tele2 NL merger

In *T-Mobile NL/Tele2 NL* (2018),<sup>53</sup> T-Mobile NL ("T-Mobile") and Tele2 NL ("Tele2") owned mobile and fixed network infrastructure in the Netherlands, and they also provided fixed and mobile retail telecommunications services to both private and business customers, and some wholesale services.<sup>54</sup> The merging parties were two of the four active mobile network operators ("MNOs") in the Netherlands, alongside KPN and VodafoneZiggo. Additional firms also provided mobile services, including mobile virtual network operators ("MVNOs") and branded resellers.<sup>55</sup> As part of its investigation, the Commission explored the following theories of harm:<sup>56</sup>

- (a) potential anti-competitive unilateral effects on prices and innovation in the retail mobile telecommunications market;
- (b) potential anti-competitive coordinated effects; and
- (c) potential anti-competitive incentives on the wholesale access terms to MVNOs.

This section focuses on the unilateral effects theory of harm, with the Commission dismissing the other theories of harm.

In 2017, the merging parties accounted for between 20–30% of the Dutch retail mobile telecommunications market post-merger, with an increment of between 5–10%.<sup>57</sup> KPN accounted for 30–40% of the market and VodafoneZiggo for 20–30%, based on both their revenues or number of subscribers. The MVNOs accounted for 10–20% of the market in terms of subscribers and 5–10% based on revenues.<sup>58</sup> The merging parties' shares ranged from between 20–40% when looking at the private customers or private post-paid segment only of the mobile telecommunications market, based on their revenues or number of subscribers. However, the parties were smaller when considering the private pre-paid segment or the business segment, with shares of between 5–20% based on their revenues or number of subscribers.<sup>59</sup>

Accordingly, the retail mobile telecommunications market in the Netherlands was concentrated, but shares varied across markets and depending on the underlying market share metric considered. However, the Commission accepted that the merged undertaking's market share was not particularly high, at 20–30%, and Tele2's share across various measures was 5–10%, such that the increase in concentration was modest.<sup>60</sup>

The Commission considered that pre-transaction, T-Mobile and Tele2 were close competitors, but that there was an increasing gap between Tele2's network performance (capacity and quality) and that of T-Mobile. In particular, the Commission found that Tele2 offers lower network quality compared to other Dutch MNOs, and various factors were likely to lead to its competitive strength declining absent the merger.<sup>61</sup>

During Phase 2, both the Commission and the parties carried out further surveys as part of the assessment of the first theory of harm, i.e. the likely price effects post-merger. As discussed in Section 2, surveys are useful tools to gather evidence on the closeness of competition between products/firms, as they enable questions about customer preferences and their reactions to a price increase or product unavailability (which provides the diversion ratios).

To investigate the post-merger unilateral price effects, the Commission conducted a discrete choice customer survey, asking 2,500 customers who had recently switched to T-Mobile, Tele2 and Simpel whether they would still have switched if their new operator was:

- (a) more expensive (“intensive question”); or
- (b) not available (“extensive question”).<sup>62</sup>

To assess the likely price effects in the retail mobile telecommunications market, the Commission relied on this discrete choice customer survey to produce two sets of diversion ratios. One used the “intensive question”, i.e. switching behaviour in case of a price increase. The other was based on the “extensive question”, i.e. the second choice if the new provider was not available. The Commission’s base results used the responses to both questions as few respondents replied to the intensive question.

Overall, the Commission found substantial diversion between the four MNOs in the market based on these diversion ratios, at both a network and provider (i.e. including MVNOs as separate providers) level. These results are shown in the two tables below.

**Table 3.1: Diversion ratios based on the intensive and extensive survey question, network level**

	TMNL	Tele2 NL	KPN	Vodafone
<b>Overall private</b>				
	-	[10–20]%	[40–50]%	[40–50]%
<b>Tele2 NL</b>	[40–50]%	-	[30–40]%	[20–30]%
<b>Postpaid private</b>				
	-	[10–20]%	[40–50]%	[40–50]%
<b>Tele2 NL</b>	[40–50]%	-	[30–40]%	[20–30]%

Source: *T-Mobile NL/Tele2 NL*, Table 13.

**Table 3.2: Diversion ratios based on the intensive and extensive survey question, provider level**

	TMNL	Tele2	Simpel	KPN	Vodafone	Others
<b>Overall private</b>						
<b>TMNL</b>	-	[10–20]%	[5–10]%	[30–40]%	[40–50]%	[0–5]%
<b>Tele2 NL</b>	[30–40]%	-	[5–10]%	[30–40]%	[20–30]%	[0–5]%
<b>Simpel</b>	[20–30]%	[10–20]%	-	[30–40]%	[10–20]%	[10–20]%

	TMNL	Tele2	Simpel	KPN	Vodafone	Others
<b>Postpaid private</b>						
<b>TMNL</b>	-	[10–20]%	[5–10]%	[30–40]%	[40–50]%	[0–5]%
<b>Tele2 NL</b>	[30–40]%	-	[10–20]%	[20–30]%	[20–30]%	[0–5]%
<b>Simpel</b>	[20–30]%	[10–20]%	-	[30–40]%	[10–20]%	[10–20]%

Source: *T-Mobile NL/Tele2 NL*, Table 14.

The Commission estimated significant diversion from Tele2 towards T-Mobile, i.e. [40–50]% and [30–40]% at network level and provider level, respectively, but not in the opposite direction (i.e. from T-Mobile to Tele2). Indeed, most customers switching away from T-Mobile choose either KPN or Vodafone as their second-best alternative. Hence, despite some significant diversion between the parties, the Commission found that there is a significant degree of closeness of competition among the four MNOs in the market.<sup>63</sup>

Furthermore, the Commission performed a calibrated merger simulation to estimate the likely price effects. As part of this exercise, the Commission used the diversion ratios calculated from both its survey and the Mobile Number Portability (“MNP”) data.<sup>64</sup> Prices were calculated as the Average Revenue Per Unit (“ARPU”), and quantities and market shares are calculated using operators’ gross additions.<sup>65</sup> These model inputs were derived from the parties’ segment level monthly data on each provider’s customers. Revenues and costs were available in each segment at the retail level for MNOs and main MVNOs, enabling a calculation of the “contribution margins”. The Commission also had access to data on operating expenditures (“OPEX”) and avoidable capital expenditures (“CAPEX”), enabling a calculation of the “incremental margins”.<sup>66</sup>

The Commission modelled the pre-merger market as a Bertrand-Nash equilibrium with differentiated products. Post-merger, T-Mobile and Tele2 are under common ownership and optimise profits jointly, thus enabling an assessment of the extent of price increases. The Commission assumed linear demand.<sup>67</sup> As noted in Section 2, this assumption is more conservative (i.e. will predict smaller price increases) than certain other forms of demand functions. The Commission partially accepted the parties’ claim that the transaction would lead to efficiencies, resulting from the elimination of the National Roaming Agreement (“NRA”) between the parties. Hence, the simulation accounted for a cost decrease post-merger. It also accounted for feedback effects from competitors, while the GUPPI does not, as discussed in the previous section.

The Commission also considered a set of sensitivities, and how these affected predicted price increases. Some scenarios used diversion ratios calculated from different evidence: extensive and intensive survey question, as well as using the MNP data. The Commission also ran its model using different assumptions on the extent of the cost efficiencies and using different margins measures, i.e. contribution and incremental margins. One sensitivity also introduced an outside good (i.e. allowing some consumers to respond to price increases by not buying).<sup>68</sup>

Across these scenarios, the Commission predicted that the parties’ price increase would increase post-merger. Table 3.3 reports the baseline results, predicting price increases of less than 10% across all providers and segments, which the Commission described as “moderate” and, specifically, that different margin measures (i.e. lower margins) and an outside good

reduced the predicted price increases. However, importantly, the Commission's analysis of price effects does not take account of the reduced competitive pressure from Tele2 in the future.

**Table 3.3: Calibrated Merger Simulation baseline scenario results**

	Postpaid Private		Overall Private	
	Network level	Provider level	Network level	Provider level
<b>TMNL</b>	[5–10]%	[0–5]%	[5–10]%	[0–5]%
<b>Tele2 NL</b>	[5–10]%	[5–10]%	[5–10]%	[0–5]%
<b>KPN</b>	[0–5]%	[0–5]%	[0–5]%	[0–5]%
<b>VodafoneZiggo</b>	[5–10]%	[0–5]%	[0–5]%	[0–5]%
<b>Simpel</b>		[0–5]%		[0–5]%
<b>Youfone</b>		[0–5]%		[0–5]%
<b>AH Mobiel</b>				[0–5]%
<b>Lebara</b>				[0–5]%
<b>Lycamobile</b>				[0–5]%
<b>Segment Effect</b>	[5–10]%	[0–5]%	[0–5]%	[0–5]%

Source: *T-Mobile NL/Tele2 NL*, Table 15.

The merging parties expressed several concerns regarding the Commission's approach. First, the MNP data does not capture either customers who switched providers and changed their number, or the switching patterns directly following a price increase.<sup>69</sup> Second, the survey that the Commission conducted asks a set of hypothetical questions, where respondents answered without the necessary full information set.<sup>70</sup> Third, the survey does not include competitors' customers.<sup>71</sup> Fourth, it is based on an overly small sample, reducing the robustness of the diversion ratio calculations.<sup>72</sup> Fifth, the survey does not capture the difference of product attributes, e.g. data allowances, between providers.<sup>73</sup> Sixth, the intensive question's design is leading and likely to bias the responses.<sup>74</sup>

To address these potential issues, the merging parties submitted an alternative merger simulation as part of the Phase 2 investigation. The parties argued that this alternative approach was more reliable than any diversion predictions based on MNP data, i.e. the evidence used for the diversion ratios of the parties' MNOs rivals in the Commission's baseline model. The parties therefore conducted an additional customer survey, asking customers to choose between different combinations of fixed and mobile services. They used the survey results to estimate customer preferences based on a discrete choice random coefficient utility model. These were eventually used to derive alternative diversion ratios measures. The parties further adjusted the model such that the implied market shares and margins matched the observed ones. The parties also considered additional sensitivities, adjusting the model for further cost synergies and quality improvements post-merger.

However, the Commission expressed several concerns regarding this alternative approach. First, the Commission considered that the parties' survey design was likely to overestimate the competitive pressure from bundles of fixed-mobile services (fixed-mobile convergent

offerings or products, or “FMC products”). Second, estimated consumer preferences based on this approach are likely to be unstable. Third, the simulated model is overly sensitive to the calibration choices. Fourth, the modelling of post-merger cost synergies is unreliable.

The Commission also addressed the parties’ criticism regarding its approach.<sup>75</sup> First, its survey included screening questions to minimise potential biases from hypothetical questions. Further, the Commission expected no bias from these questions as they aim to capture the distribution of second-choice alternative providers rather than reactions to a price increase, as claimed by the parties. Second, the survey aimed to be representative of the merging parties’ customers, rather than the whole Dutch customer base. Third, the Commission also used the extensive question survey evidence in its model sensitivities, which has more responses. Fourth, the Commission noted the parties’ criticisms of the MNP data, but replied that the Commission placed little weight on this evidence and its results were robust to using other data sources.

Overall, the Commission did not need to further analyse the parties’ alternative approach because its own quantitative analyses, diversion ratios and calibrated merger simulation, predicted limited post-merger price effects and, importantly, competition from Tele2 was expected to decline in the future. Hence, the Commission concluded in its quantitative assessment of post-merger price effects: “[The] Transaction would not significantly impede effective competition as a result of horizontal non-coordinated effects in the market for retail mobile telecommunication services in the Netherlands.”<sup>76</sup>

However, there are nevertheless two key takeaways from the merger simulation analysis undertaken by both the Commission and the merging parties. First, the Commission considered that its approach produced results that were more stable than the parties. The calibrated simulation model had relatively consistent results across sensitivities, i.e. regardless of the diversion ratios used, margins measures used, the efficiencies assumptions and being at network or provider level. This may explain why the Commission was highly critical of the parties’ model sensitivity to assumptions and inputs. In short, the Commission appears to value analyses with results that are robust across sensitivities.

Second, the Commission was more open to parties’ criticisms regarding specific assumptions of its model than their alternative submission, including another survey and calibrated model. For instance, the Commission accepted the parties’ claim regarding the elimination of the NRA and lower marginal costs post-merger. It then incorporated the post-merger efficiencies in its calibrated model. However, the Commission was highly critical of the parties’ new survey and alternative model. In particular, the Commission indicated that the parties’ efficiencies modelling was unreliable. Accordingly, criticisms from the parties regarding specific assumptions of the Commission’s model were more successful in influencing the quantitative analyses’ conclusions than submitting a whole new quantitative analysis.

#### FCA/PSA merger

*FCA/PSA* (2020)<sup>77</sup> is another interesting case wherein the Commission performed a quantitative analysis to estimate the post-merger price effects, focusing on LCVs. Across the passenger car (“PC”) and LCV markets in which the parties were active, the Small LCVs market appears to be the most concentrated. At EEA level, the merging parties would represent 40–50% of the LCV market based on 2017–2019 sales.<sup>78</sup> Renault-Nissan-Mitsubishi (“RNM”) was second with a market share of between 20–30%.<sup>79</sup> Ford and Volkswagen came after, each accounting for 10–20% of the market. All the other manufacturers represented less than 5%.<sup>80</sup>

The Commission then assessed the competitive effects of the merger in Small LCV markets across Europe. This competition assessment started with considering the parties’ national

market shares and whether they faced a number of sizeable rivals with material market shares. The Commission then explored whether the parties were close competitors based on the rankings of market participants, comparisons of the parties' prices, and customer survey data (in certain countries where it was available).

Before addressing the Commission's quantitative analysis, it is appropriate to emphasise that the Commission also assessed competitive supply-side dynamics. For example, the Commission found that the LCV market in Croatia was highly contestable, based on material market share volatility and the parties having lost over 20 percentage points of market share to VW and RNM.<sup>81</sup>

Turning to the customer survey data, during Phase 2, the merging parties submitted "hesitation data", collected as part of the New Van Buyer Survey ("NVBS"), to the Commission.<sup>82</sup> For each model purchased, the hesitation data indicates the main alternative model considered by the customer. This data was available for "big five" European LCV markets (Germany, France Italy, Spain and the UK). The parties also submitted further hesitation data covering specific PC models in 12 European countries. As discussed in the previous sections, second-choice data provides insight on the closeness of competition between products/firms. If products or firms are the second choice for customers, then they are likely to be close substitutes.

Based on this hesitation data, the Commission estimated diversion ratios for each LCV segment, i.e. small, compact, medium and large LCVs. Depending on the segment, between 60–80% of customers considered a vehicle on the same LCV segment as the main alternative.<sup>83</sup> In other words, few customers considered out-of-segment options as their second choice, indicating low substitution between segments. Only two segments appear to exercise some competitive constraint on each other: 40–50% of Small LCV customers considered a compact LCV as their main alternative.<sup>84</sup>

Based on these findings (and price/size comparisons, the views of other market participants and the parties' internal documents), the Commission considered that the LCV market should be categorised into three sub-markets: Small (including compact vehicles); Medium; and Large. The Commission also highlighted that this finding was in line with customer surveys showing that vehicle size is one of the main selection criteria. The Commission then calculated diversion ratios for each segment in all countries where the parties overlap. For example, the Commission's assessment of the Small LCV market in France used the hesitation data to assess closeness of competition between brands. Its main findings were:<sup>85</sup>

- (a) PSA exercises the most competitive pressure on FCA, "with a diversion ratio of [40–50%] from FCA towards PSA".<sup>86</sup> RNM is second, with 30–40% diversion, and Ford is third, with 10–20% diversion.
- (b) However, FCA does not exercise the same competitive pressure level on PSA. The diversion ratio from PSA to FCA is only between 5–10%, i.e. the fourth-closest competitor, behind RNM (60–70%), Ford (10–20%) and Volkswagen (10–20%).

Hence, the Commission concluded that the parties are close competitors in the Small LCV market in France, and that the merger would "eliminate one of PSA's main constraints in this market".<sup>87</sup> The Commission performed similar assessments in 26 other European countries to assess the likely price effects of the merger in the Small LCV market. The Commission calculated diversion ratios for countries included in the hesitation data. Overall, the Commission considered that the merger will raise competitive concerns in the Small LCV market in nine countries, due to the merged undertaking having a high market share and the parties being close competitors.<sup>88</sup>



The Commission carried out the same analysis for 14 countries for the Medium LCV market, where the parties' combined share was between 20–30% or more.<sup>89</sup> As opposed to the Small LCV market, the Medium LCV segment did not raise competitive concerns in any European country.<sup>90</sup> The Commission then investigated the Large LCV market, calculating diversion ratios in 23 European countries. As for the Medium LCV market, the Commission concluded that no competitive concerns would arise in any European country following the merger.<sup>91</sup>

In addition, the Commission used the estimated diversion ratios to calculate implied market shares, which “*indicate how large the Parties' market shares would have to be for them to give rise to the observed diversion ratios*”.<sup>92</sup> This can provide further evidence regarding the closeness of competition, as implied shares larger than the observed ones indicate that the parties “*compete more closely with each other than their market shares suggest*”.<sup>93</sup> Overall, the Commission found that the implied shares are close to the actual ones in the Small and Medium LCV markets, suggesting that the diversion ratios accurately estimate likely price effects. On the other hand, competition between the parties in the Large LCV market is more intense than the actual shares would suggest.

To further evaluate the likeliness of a price increase across the relevant LCV markets, the Commission calculated GUPPIs and CMCRs across segments. The Commission used the hesitation data to calculate diversion ratios per year, country and segment, and report the average across countries and year, weighted by their market sizes. The Commission also adjusted the calculations to allow possible diversion to an outside good. The Commission then calculated GUPPIs and CMCRs by combining the above diversion ratios with variable cost margins (provided by the parties at segment-brand-country level).

The Commission reported the gross GUPPI and gross CMCR in every European LCV market where the parties' combined share and increment were larger than 30% and 1%, respectively. The Commission calculated both the GUPPIs and the CMCRs using two different measures:

- (a) diversion ratios: for the five countries covered in the hesitation data, the Commission used diversion ratios to derive the GUPPI and CMCR. For the rest of the problematic markets, “*it applies the ratio of actual to implied diversion observed on aggregate for the big-5 to the diversion ratios implied by the market shares in the respective small country*”;<sup>94</sup> and
- (b) market shares: where the Commission assumed “*diversion occurs in proportion to market shares*”.<sup>95</sup>

The Commission reported the two measures of both the GUPPIs and the CMCRs. It then conservatively chose the smallest measure of both the GUPPI and CMCR, i.e. the smallest between the calculated diversion ratios and market shares. The Commission provided the following findings:<sup>96</sup>

- (a) Small LCVs: Italy, Malta, Poland and Slovakia had a CMCR of between 5–10%, while the other problematic markets were smaller than 5%. Italy was the only country with a GUPPI of 5–10%, while the other problematic markets were under 5%;
- (b) Medium LCVs: both metrics in all countries were under 5%; and
- (c) Large LCVs: Italy and Slovakia were the only markets with a CMCR of between 5–10%. Slovakia also had a GUPPI of between 5–10%. Otherwise, the two price effects measures in the other countries were under 5%.

In addition, the Commission reported sensitivities where it accounted for efficiencies related to purchasing post-merger.<sup>97</sup> The Commission accepted parts of the parties' arguments, i.e. regarding aligning and reducing purchasing prices, as well as “*converging on the best*

*technical solutions*”,<sup>98</sup> but rejected the idea that purchasing prices would decrease due to larger volumes of purchases. Hence, the Commission calculated alternative cost efficiency estimates to the ones initially submitted by the parties. The Commission also considered “*synergies to SG&A, finance and other functions*”, in particular aftermarket and used cars efficiencies.<sup>99</sup> The Commission gathered these efficiencies estimates *per annum*, to capture that these synergies are likely to take a few years to occur.

Adjusting for post-merger efficiencies, only two countries had net CMCRs from 2026 of between 5–10% in the Small LCV market (Italy and Slovakia). The other segments have CMCRs of under 5% in all countries. The Commission estimated that the efficiencies may take a few years to outweigh the UPP post-merger, as the net CMCRs 2021–2025 were almost identical to the ones not accounting for efficiencies.<sup>100</sup> Based on these net GUPPIs and CMCRs, the Commission estimated that the merger would lead to “*positive net static price effects in each of the nine Small LCV markets in which the Transaction, as notified, raised serious doubts*”.<sup>101</sup> Despite adjusting for efficiencies, some competitive concerns were likely to arise in the Small LCV markets. Hence, the transaction required remedies across these problematic LCV markets, but was eventually approved by the Commission.

Given this analysis, the Commission only found competition concerns for the Small LCV markets in nine European countries. As a result, the parties submitted a set of commitments to address the Commission’s concerns. First, the parties offered to reinforce the cooperation agreement between PSA and Toyota Motor Europe (“Toyota”).<sup>102</sup> The current agreement with Toyota reserves some of PSA’s Small LCV capacity for Toyota to supply to the EU (which Toyota had previously asked to extend; the exact amount is redacted). The remedy therefore granted Toyota extra capacity, but also discounts on the transfer price currently in place for the initial capacity.<sup>103</sup>

Second, the parties offered to amend the agreements between PSA, FCA and their repairer networks, to “*facilitate access for third-party OEMs to FCA and PSA’s repair and maintenance networks for LCVs*”.<sup>104</sup> There are 18 LCV commitments and seven PC commitments, ranging from preventing PSA or FCA having dedicated entrances, receptions, waiting areas and parking areas, to not requiring repairers to remove another brands’ signage and logos.<sup>105</sup> Encouragingly, when the Commission market tested the remedies, they found that “*a clear majority of all dealers and repairers as well as a majority of the customers and competitors that expressed a view were of the opinion that after the implementation of both remedies the combined entity would not have the incentive and ability to raise prices*”.<sup>106</sup>

Overall, our view is that the commitments were balanced and proportionate as they reinforced actual and potential competition in the LCV market, without a more heavy-handed physical divestment from the merging parties. More specifically, the commitments boosted the supply and competitiveness of a third party (Toyota), while ensuring rival original equipment manufacturers (“OEMs”) have equal access to the LCV repair and maintenance network. As regards the quantitative analysis, it was also interesting that the Commission used diversion ratios to help define the relevant market. In particular, the diversion ratios within and between segments allowed the Commission to test the relevance of their initial market definitions (a good illustration that diversion ratios are more useful than just estimating the likely price effects post-merger).

## Conclusions

Merger control in differentiated markets is potentially highly complex, as market shares may not be a good indicator of the risks of anti-competitive unilateral effects. This is

because market shares say little about how “close” two competitors are, nor the extent of rivalry from substitutes “outside” any narrowly defined markets. Whilst creating or enhancing high market shares may indicate likely competition concerns, there will be exceptions – as well illustrated by the CMA’s clearance decision in *Bottomline/Experian Payments Gateway*. In that case, there was clear evidence that market shares reflected EPG’s historical competitiveness (as opposed to its weak, current competitiveness) and that the parties were not close competitors.

The various quantitative tools discussed in Section 2 give an order of magnitude assessment, rather than estimating a precise price increase (which the CMA and Commission acknowledge). They also naturally focus on how customer behaviour affects the merged firm’s incentives to worsen its offer due to the loss of rivalry between the parties. In our view, these tools are still fit for purpose in 2022. However, the above case studies highlight the importance of sensitivity testing to reflect the underlying uncertainty when measuring diversion ratios and gross margins. Also, the parties should carefully consider any efficiencies from the merger and make sure any efficiencies are well evidenced.

In addition, supply-side factors still remain an important part of the assessment and can be determinative, such as Tele2’s declining competitiveness. The expected expansion of rivals could also be a substantial constraint.

Finally, any remedies in differentiated markets should obviously be targeted at removing incentives to increase prices, and the Commission’s supply-side remedies in *FCA/PSA* aimed at increasing competition in affected Small LCV markets were an elegant solution – and also one that preserved merger synergies.

\* \* \*

## Endnotes

1. CMA Merger Assessment Guidelines, 2021, at para. 9.4.
2. In some differentiated markets, large retailers or other purchasers may have countervailing buyer power over large suppliers of differentiated goods/services. However, this should not be presumed (and small purchasers may lack such buyer power), and a merger may reduce customers’ buyer power by reducing the number of independent options to which customers can threaten to switch. In addition, depending on the circumstances, other supply-side factors can also be particularly relevant, especially when the underlying product suppliers are large and can dictate the terms of distribution and trade. See, for example, the CMA’s decision in *JD Sports/Footasylum* (2021), where Nike and Adidas had significant control of the distribution and presentation of their products by retailers, which arguably could have mitigated any attempt by the parties to worsen their offer post-merger (see *JD Sports/Footasylum* Phase 2 Final Report, para. 9.25). On the facts of the case, the CMA concluded that these supplier constraints were insufficient.
3. For example, Valletti and Zenger emphasise that “*adverse merger effects can only materialize if there is some form of barriers to entry*” (see Valletti, Tommaso and Zenger, Hans (2021), “Mergers with Differentiated Products: Where Do We Stand?”, *Review of Industrial Organization*, 58, issue 1, pp 179–212). Tommaso Valletti served as Chief Competition Economist at the European Commission from 2016–2019.
4. These tools are in fact used by many competition authorities globally, including the U.S. Department of Justice and Federal Trade Commission and the Japanese Fair

Trade Commission. Indeed, the two articles particularly referenced in the chapter by Valletti and Zenger (*op. cit.*, Note 3) and Miller and Sheu are written in the context of an edition of the *Review of Industrial Organization* which focuses on a 10<sup>th</sup> anniversary review of the 2010 U.S. Horizontal Merger Guidelines (Nathan H. Miller and Gloria Sheu (2021), “Quantitative Methods for Evaluating the Unilateral Effects of Mergers”, *Review of Industrial Organization*, 58, issue 1, pp 143–177).

5. *Op. cit.*, Note 3.
6. *Op. cit.*, Note 4.
7. *Op. cit.*, Note 3, p. 4. The CMA’s Merger Assessment Guidelines also indicate that assessment of closeness of competition may be informed from a diverse range of other sources, including information on product characteristics or uses, internal documents (e.g. which competitors do they monitor or respond to), and evidence as to effects of previous, similar mergers or entry/exit (e.g. if previous mergers/exit led to higher prices) (see para. 4.13).
8. Also see “Unilateral Effects with General Linear Demand”, Jerry Hausman, Serge Moresi, and Mark Rainey (2010), available at: <https://economics.mit.edu/files/6601#:~:text=It%20is%20straightforward%20to%20demonstrate,by%20the%20unit%20sales%20of.> “UPP, GUPPI and IPR – Merger Screening Tools”, *CCR - Competition Competence Report Spring* (2013), available at: [https://www.ee-mc.com/file-admin/user\\_upload/CCR\\_Spring\\_2013\\_\\_1\\_.pdf](https://www.ee-mc.com/file-admin/user_upload/CCR_Spring_2013__1_.pdf).
9. *Op. cit.*, Note 3, p. 5.
10. *Op. cit.*, Note 3, p. 5.
11. There may also be diversion outside of the relevant market, which can be diversion to alternative products or suppliers outside the specific geographic area, or simply customers buying less.
12. *Op. cit.*, Note 3, p. 5. If diversion occurred in proportion to market shares, the diversion ratio from firm 1 to firm 2 would equal  $D_{12} = S_2/(1 - S_1)$ , where  $S_1$  and  $S_2$  denote the market shares of firms 1 and 2, respectively. Similarly,  $D_{21} = S_1/(1 - S_2)$ . Solving this pair of equations for  $S_1$  and  $S_2$  then gives the parties’ implied market shares as a function of both diversion ratios,  $S_1 = [D_{21}(1 - D_{12})]/(1 - D_{12}D_{21})$  and  $S_2 = [D_{12}(1 - D_{21})]/(1 - D_{12}D_{21})$ .
13. 2010 U.S. Horizontal Merger Guidelines [Washington, D.C.]: U.S. Dept. of Justice, available at: <http://purl.fdlp.gov/GPO/gpo6633>.
14. *Op. cit.*, Note 3, p. 6.
15. *Op. cit.*, Note 3, p. 6.
16. *Op. cit.*, Note 3, p. 7.
17. *Op. cit.*, Note 3, p. 6.
18. Salop, S.C., and Moresi, S. (2009), “Updating the Merger Guidelines: Comments”, Georgetown Law Faculty Publications and Other Works 1662.
19. *Op. cit.*, Note 3, p. 7.
20. *Op. cit.*, Note 3, pp 9–10.
21. *Op. cit.*, Note 3, p. 7. It is straightforward to incorporate feedback effects as regards the merging parties’ pricing into the measure of UPP and GUPPI. For the GUPPI, this would require adding the term  $D_{12}D_{21}M_1$ . This is set out in the OECD’s Secretariat’s background note on market definition of 25 May 2012 (DAF/COMP(2012)13).
22. This is commonly referred to as the curvature of demand.
23. Miller, N. H., Remer, M., Ryan, C., & Sheu, G. (2017), “Upward pricing pressure as a predictor of merger price effects”, *International Journal of Industrial Organization*, 52, pp 216–247.

24. *Op. cit.*, Note 3, p. 8.
25. *Op. cit.*, Note 3, p. 8.
26. *Op. cit.*, Note 3, p. 8.
27. *Op. cit.*, Note 3, p. 9.
28. *Op. cit.*, Note 3, p. 8.
29. Willig, R. (2011), “Unilateral Competitive Effects of Mergers: Upward Pricing Pressure, Product Quality, and Other Extensions”, *Review of Industrial Organization*, 39 (1–2), pp 19–38.
30. Jaffe, S., & Weyl, G. (2013), “The First-Order Approach to Merger Analysis”, *American Economic Journal: Microeconomics*, 5 (4), pp 188–218.
31. *Op. cit.*, Note 3, p. 12.
32. *Op. cit.*, Note 3, pp 12–13.
33. *Op. cit.*, Note 3, p. 13.
34. *Op. cit.*, Note 3, p. 14.
35. *Op. cit.*, Note 3, p. 16.
36. *Bottomline Technologies/Experian Limited* (CMA Final Report of 17 March 2020), para. 4.1.
37. *Op. cit.*, Note 36, para. 11.
38. *Op. cit.*, Note 36, para. 1.
39. *Op. cit.*, Note 36, para. 31.
40. *Op. cit.*, Note 36, Table 9.
41. *Op. cit.*, Note 36, Table 10.
42. *Op. cit.*, Note 36, Table 11.
43. *Op. cit.*, Note 36, para. 25.
44. *Op. cit.*, Note 36, para. 8.90.
45. *Op. cit.*, Note 36, para. 8.91.
46. *Op. cit.*, Note 36, para. 8.93.
47. *Op. cit.*, Note 36, para. 8.97.
48. *Op. cit.*, Note 36, para. 8.98.
49. *Op. cit.*, Note 36, para. 8.98.
50. *Op. cit.*, Note 36, paras 8.119–8.120.
51. *Op. cit.*, Note 36, para. 8.150.
52. *Op. cit.*, Note 36, para. 9.1.
53. Case M.8792 *T-Mobile NL/Tele2 NL* (Commission decision of 27 November 2018).
54. *Op. cit.*, Note 53, para. 3.
55. *Op. cit.*, Note 53, para. 49.
56. Commission press release, November 2018, available at: [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_18\\_6588](https://ec.europa.eu/commission/presscorner/detail/en/IP_18_6588).
57. *Op. cit.*, Note 53, Table 3.
58. *Op. cit.*, Note 53, Table 3.
59. *Op. cit.*, Note 53, Table 6 and Table 7.
60. *Op. cit.*, Note 53, paras 396–397.
61. *Op. cit.*, Note 53, Section 8.3.2.
62. *Op. cit.*, Note 53, para. 710.
63. *Op. cit.*, Note 53, para. 720.
64. During the Phase 1 investigation, the Commission produced diversion ratios based on MNP data. MNP data contains switching information as it keeps track of customers who switched providers but kept their previous phone number. Based on these

switching patterns, the Commission estimated significant diversion between T-Mobile and Tele2 services.

65. This approach is often “used in the telecommunications industry and are calculated on the basis of the respective number of new subscribers acquired in a year by each operator without deduction of the subscribers who leave”. *Op. cit.*, Note 53, para. 365.
66. *Op. cit.*, Note 53, Annex A, paras 124–125.
67. *Op. cit.*, Note 53, Annex A, para. 8.
68. *Op. cit.*, Note 53, para. 821.
69. *Op. cit.*, Note 53, Annex A, para. 72.
70. *Op. cit.*, Note 53, Annex A, para. 84.
71. *Op. cit.*, Note 53, Annex A, para. 85.
72. *Op. cit.*, Note 53, Annex A, para. 86.
73. *Op. cit.*, Note 53, Annex A, para. 87.
74. *Op. cit.*, Note 53, Annex A, para. 87.
75. *Op. cit.*, Note 53, Annex A, paras 90–94.
76. *Op. cit.*, Note 53, para. 831.
77. Case M.9730 FCA/PSA (Commission decision of 21 December 2020).
78. *Op. cit.*, Note 77, Table 11.
79. *Op. cit.*, Note 77, Table 11.
80. *Op. cit.*, Note 77, Table 11.
81. *Op. cit.*, Note 77, para. 372.
82. *Op. cit.*, Note 77, para. 72.
83. *Op. cit.*, Note 77, para. 72.
84. *Op. cit.*, Note 77, para. 72.
85. *Op. cit.*, Note 77, para. 417.
86. *Op. cit.*, Note 77, para. 417.
87. *Op. cit.*, Note 77, para. 423.
88. *Op. cit.*, Note 77, para. 625.
89. *Op. cit.*, Note 77, Table 44.
90. *Op. cit.*, Note 77, para. 765.
91. *Op. cit.*, Note 77, para. 1081.
92. *Op. cit.*, Note 77, Annex on LCVs, para. 45.
93. *Op. cit.*, Note 77, Annex on LCVs, para. 45.
94. *Op. cit.*, Note 77, Annex on LCVs, Table 7 notes.
95. *Op. cit.*, Note 77, Annex on LCVs, Table 7 notes.
96. *Op. cit.*, Note 77, Annex on LCVs, para. 84.
97. *Op. cit.*, Note 77, Annex on LCVs, Table 11.
98. *Op. cit.*, Note 77, Annex on LCVs, para. 104.
99. *Op. cit.*, Note 77, Annex on LCVs, para. 106.
100. *Op. cit.*, Note 77, Annex on LCVs, Table 11.
101. *Op. cit.*, Note 77, Annex on LCVs, para. 114.
102. *Op. cit.*, Note 77, para. 2014.
103. *Op. cit.*, Note 77, para. 2020.
104. *Op. cit.*, Note 77, para. 2014.
105. *Op. cit.*, Note 77, para. 2032.
106. *Op. cit.*, Note 77, para. 2039.

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