Response to the European Commission's Targeted Consultation on Revising its Merger Guidelines

Non-Horizontal Merger Review: Quantitative Tests on Ability versus Incentives to Foreclose, the Stakeholder Effect, and the Absence of the Cournot Effect

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I. Introduction and summary

The European Commission ("the Commission") launched both a Public and a Targeted Consultation in revising its horizontal and non-horizontal merger guidelines (together, "the Guidelines").[1] The Targeted Consultation contains 7 Topics (topics A through G). Topic B relates to "*Assessing market power using structural features and other market indicators*". Within Topic B, question B.13 asks, "*Which structural indicators / market features should the Commission use in the assessment of non-horizontal foreclosure effects? Please detail such indicators / features, provide underlying evidence of their suitability, and specify whether they would support the ability, incentive, or effects of foreclosure. To the extent relevant, please differentiate between vertical and conglomerate mergers in your response.*" Our comments relate to question B.13 and focus mainly on vertical mergers. We also provide comments on mergers of complements (a form of conglomerate mergers).

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[1] The Commission published its horizontal merger guidelines in 2004 and non-horizontal merger guidelines in 2008.

The current non-horizontal merger guidelines ("NHMG") discuss vertical mergers in section IV and conglomerate mergers in section V. The NHMG explain that the Commission considers foreclosure scenarios in reviewing non-horizontal mergers. In assessing such scenarios, it considers the proposed merged entity's ability and incentives to engage in foreclosure, and it also considers the competitive effects of such foreclosure.[2]

Our comments have five main purposes. First, we suggest the Commission acknowledge an additional theory of harm regarding vertical mergers (one that is established in the economic literature but not mentioned explicitly in the Guidelines). The Guidelines currently mention foreclosure but should also mention the harmful stakeholder effect. Second, we lay out a recently-developed, practical, and transparent quantitative test (the "margin test") that the Commission can use to gauge whether the merged entity will have the *ability* to foreclose downstream rivals. Third, we discuss vGUPPI tests that the Commission can use to gauge the *incentive* to foreclose downstream rivals, and we explain how they fit with the recently-developed margin test on *ability*. Fourth, we highlight that the Cournot effect in mergers of complements does not materialize when sufficient competition exists pre-merger in the relevant markets, even if the merging parties are dominant. Fifth, we refer to a merger review test the Commission can use to assess whether the merging parties in a merger of complements will have an incentive to decrease or, instead, increase prices post-merger.[3]

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[2] See NHMG section IV.A.1.A on ability, section IV.A.1.B on incentives, and section IV.A.1.C on effects.

[3] Our comments reflect our research, e.g., A. S. Kadner-Graziano, 2025, "Vertical mergers without foreclosure", *Journal of Economics & Management Strategy* 34*,* 593-611; S. Moresi and S. C. Salop, 2013, "vGUPPI: Scoring Unilateral Pricing Incentives in Vertical Mergers", *Antitrust Law Journal* 79, 185-214; A. S. Kadner-Graziano, 2023, "Mergers of Complements: On the Absence of Consumer Benefits", *International Journal of Industrial Organization* 89, 102935; S. Moresi and S. C. Salop, 2021, "When Vertical is Horizontal: How Vertical Mergers Lead to Increases in Effective Concentration", *Review of Industrial Organization* 59, 177-204.

II. Main comments

1. The *stakeholder effect* in vertical mergers is a recognized theory of harm. A vertical merger can lessen competition and reduce consumer welfare due to the stakeholder effect alone (i.e., even without any of the effects discussed in the Guidelines). We suggest the Commission include the stakeholder effect as a potential theory of harm in the updated guidelines.

The Guidelines mention foreclosure (input and customer foreclosure),[4] access to sensitive information,[5] and coordinated effects as potential harms from vertical merger.[6] However, the academic literature has established that vertical mergers can lessen competition through an additional effect. The Guidelines omit this effect. To illustrate the omitted effect, suppose firm A competes with firm B and acquires firm S, where firm S is an input supplier to firm B. Post-merger, the merged entity (firm AS) profits from both the sales of its downstream division A and the sales of its upstream division S. When firm B sells more output in the downstream market, it purchases more inputs from the merged entity. Because the merged entity profits from sales of firm B (its downstream competitor), it has a lesser incentive to compete against firm B. This lessens competition in the downstream market.[7]

There is no settled name for this effect which was first identified by Chen (2001).[8] It has been called the "collusive effect" by Chen (2001), "input supply effect" by Moresi and Schwartz (2017), "Chen effect" by Moresi and Schwartz (2021) and Moresi and Salop (2021), and "stakeholder effect" by Kadner-Graziano (2025).[9] Hereafter, we use "stakeholder effect" because, intuitively, the merged firm AS competes more softly due to its stake in firm B's sales.

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4 See NHMG ¶¶ 31-57 on input foreclosure and NHMG ¶¶ 58-77 on customer foreclosure.

5 NHMG, ¶ 78.

6 NHMG, ¶¶ 79-90.

7 Like other theories of harm in vertical merger cases, the ultimate concern is horizontal. 15 U.S.C. § 18 ("… the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly."). See also Moresi and Salop (2021), *supra* n. 3.

8 Y. Chen, 2001, "On Vertical Mergers and Their Competitive Effects", *The RAND Journal of Economics* 32, 667–685.

9 *Ibid.*; S. Moresi and M. Schwartz, 2017, "Strategic Incentives when Supplying to Rivals with an Application to Vertical Firm Structure", *International Journal of Industrial Organization* 51, 137-161; S. Moresi and M. Schwartz, 2021, "Vertical Mergers with Input Substitution: Double Marginalization, Foreclosure and Welfare", *Economics Letters* 202; Moresi and Salop (2021) and Kadner-Graziano (2025), *supra* n. 3.

Crucially, the stakeholder effect can materialize even absent any of the effects discussed in the Guidelines. For example, suppose firm S faces competitors in the input market so that the merged entity AS cannot foreclose firm B. Suppose further that there are no concerns of coordination or of access to competitively sensitive information. Then, the merger still can lessen competition and reduce consumer welfare due to the stakeholder effect alone.

The Guidelines acknowledge that mergers can create efficiencies.[10] Absent any of the effects harmful to competition discussed in the Guidelines, a vertical merger can have two countervailing effects on downstream competition. It can increase competition via, for example, the elimination of double marginalization ("EDM") but lessen competition via the stakeholder effect. The net effect on downstream competition and consumer welfare is generally ambiguous: a vertical merger can either increase or reduce both.

Example 1. *Firm S supplies inputs to firm A and firm B. Firm A and firm B compete in the downstream market and the diversion ratio between them equals 50%. Firm S earns a unit margin of $20 on input sales to firm A, and a unit margin of X dollars on input sales to firm B. Those margins cannot increase because input prices are constrained.[11] Firm A acquires firm S. Then, if X is sufficiently high (low), the stakeholder effect dominates (is dominated by) the EDM effect, and hence downstream competition and consumer welfare decrease (increase).[12]*

Note that, in the special case of a diagonal merger (i.e., if firm A acquires firm S without sourcing anything from firm S), there is no EDM effect. Absent any other efficiencies, the stakeholder effect lessens downstream competition, reduces consumer welfare, and benefits *all* downstream firms.[13]

We suggest that the Commission include the stakeholder effect as part of the theories of harm for vertical mergers in the revised merger guidelines.

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10 NHMG, e.g., at ¶13 and ¶28.

11 The input prices charged by firm S to the two downstream firms may be constrained if, for example, the downstream firms could produce the input in-house or procure it from an alternative supplier. Input prices and margins may differ across the two downstream firms if, for example, the latter are unequally efficient at producing the input in-house or have access to different alternative suppliers.

12 For a graphical representation of input margins such that a vertical merger will reduce versus increase consumer welfare, see Figure 1 in Kadner-Graziano (2025), *supra* n. 3.

13 The stakeholder effect benefits all downstream firms and harms the upstream rivals of the merged firm, in a similar way as when a vertical merger facilitates coordination in the downstream market. In contrast, foreclosure benefits the downstream firms that are not foreclosed and harms the firms that are foreclosed.

2. In vertical mergers, a recently-developed quantitative test (the "margin test") can be used to identify whether the merged entity will have the *ability to foreclose downstream rivals partially* (i.e., by selling the input to them at a higher price than pre-merger). We suggest the Commission consider using the margin test.

The Guidelines mention foreclosure as a theory of harm in vertical mergers.[14] They distinguish between *ability* and *incentive* to foreclose, as well as *effects* of foreclosure.[15] The Guidelines also distinguish between input and customer foreclosure.[16]

Antitrust authorities can rely on a number of tests to estimate the *incentive* of a merged entity to foreclose rivals (e.g., by raising rivals' costs as part of a strategy of complete or partial foreclosure). Such tests include "vertical arithmetic", upward pricing indices, and merger simulations. However, to our knowledge, there has been no test thus far to identify whether the merged entity will have the *ability* to foreclose rivals in the first place.

A recently-developed test for vertical mergers allows antitrust authorities to assess whether a proposed merged entity would have the *ability* to raise the price at which it sells an input to downstream rivals. The new test is consistent with standard models of vertical relationships. We next lay out an illustrative model to convey the intuition for the test.

Consider again the previous example where firm S supplies inputs to firms A and B. The supplier has a constant unit cost of production, and the downstream firms use one unit of input per unit of output. Suppose that first the supplier sets the unit input prices to firms A and B, and then the latter set the output prices of their products. Kadner-Graziano (2025) shows that, if the supplier is an *unconstrained monopolist* for input sales to firm B, then the following relationship holds between the supplier's dollar margin on input sales to firm B (denoted by m_{SB}^{u}) and firm B's dollar margin on sales of its output (denoted by m_{B}^{*}):[17]

$$m_{SB}^{u} \times \rho_{B} \geq m_{B}^{*}$$

[14] NHMG, e.g., on C 265/10 and C 265/22 among other.

[15] See subtitles "A. Ability to foreclose", "B. Incentive to foreclose", and "C. Overall likely impact on prices and choice" in NHMG, e.g., on C 265/22 - C 265/24.

[16] See NHMG ¶¶ 31-57 on input foreclosure versus NHMG ¶¶ 58-77 on customer foreclosure.

[17] This result holds for the setting described in the text. It does not hold, for example, with bargaining or two-part tariffs. For details on the model and limitations, see Kadner-Graziano (2025), *supra* n. 3.

where ρ_B denotes the pass-through rate of firm B.[18]

Now suppose that firm B can produce the input in-house at a constant unit cost (denoted by c_B) that is higher than firm S's unit cost and, furthermore, there exist one or more alternative suppliers that can supply the same input as firm S at a constant unit cost (denoted by $\bar{c}$) that also is higher than firm S's unit cost.[19] It is thus efficient for firm B to procure the input from firm S (as opposed to producing the input in-house or procuring it from an alternative supplier). The central distinction developed in Kadner-Graziano (2025) is that, if c_B and $\bar{c}$ are both relatively high, then firm S is *unconstrained* by competition and hence earns a relatively large monopoly margin. Conversely, if either c_B or $\bar{c}$ are relatively low, then firm S is *constrained* by competition and hence earns a relatively small margin (firm S would want to set a higher input price to firm B, but competition from other sources of supply prevents it from doing so).

Intuitively, the supplier's pre-merger margin on input sales to firm B reveals something about its market power over firm B. A sufficiently low margin is evidence of competitive constraints. The new test pinpoints how low "sufficiently low" is.

The test compares firm S's pre-merger dollar margin on input sales to firm B, m_{SB}^*, and firm B's pre-merger dollar margin, m_B^*. If $m_{SB}^* \times \rho_B < m_B^*$, the supplier is constrained pre-merger and cannot obtain a higher price post-merger (as it faces the same competitive constraints as pre-merger).

Margin Test*. If $m_{SB}^* \times \rho_B < m_B^*$, the proposed merged entity AS cannot obtain a higher input price from firm B than pre-merger.*

A clear benefit of this margin test is that it requires only three data points. Furthermore, it does not require to define any relevant market. On the contrary, applying the margin test can reveal whether the supplier faces relevant competitors. Also, the margin test is robust to changes in several of the underlying model assumptions. For example, it also applies with capacity constraints, differentiated inputs, and multiproduct firms. For settings where the margin test does not apply (e.g., with two-part tariffs), see Kadner-Graziano (2025).

[18] For example, a pass-through rate of 0.5 (or 50%) means that if the input price to firm B increases by 1 dollar, the output price of firm B increases by 50 cents.

[19] The test also applies when competing suppliers offer differentiated (rather than homogeneous) inputs.

Example 2. *The supplier earns a dollar margin of \$10 on each unit sold to firm B. Firm B earns a dollar margin of \$60 on each unit sold. The pass-through rate is 50%. According to the margin test, because \$10 × 50% < \$60, the supplier is constrained pre-merger and cannot obtain a higher price post-merger.*

In some cases, the Commission may have a rough estimate but no precise data on the pass-through rate. The condition in the margin test can be rewritten to back out the "critical" pass-through rate:

Margin Test (reformulated). *If* $\rho_B < m_B^*/m_{SB}^*$, *the proposed merged entity AS cannot obtain a higher input price from firm B than pre-merger.*

Example 3. *Firm S has a unit margin of \$5 on sales to firm B and firm B has a margin of \$20. The actual pass-through rate is unknown to the Commission, but they know it lies below 200%. According to the margin test, the merged entity cannot obtain a higher input price from firm B for any pass-through rate below* m_B^*/m_{SB}^* *= 20/5 = 4 or 400%. The merged entity cannot obtain a higher input price from firm B than pre-merger since the actual pass-through rate is lower than 200% and hence also lower than the critical pass-through rate of 400%.*

We emphasize, however, that vertical mergers can reduce consumer welfare even in the absence of foreclosure, as we discussed in section II.1 above. Moreover, if the merged entity cannot obtain a higher input price, it might nevertheless be able to raise its rival's cost by stopping to supply altogether.[20] In other words, the merged entity might engage in complete foreclosure if it cannot engage in partial foreclosure.

According to a widespread intuition on complete foreclosure, if the merged entity earns a small margin on input sales to firm B, it does not lose much if it forecloses firm B completely from access to its input, and hence is more likely to have the incentive to do so. However, the margin might be small precisely because the merged entity is constrained. Therefore, the margin test can be used also to inform the Commission on whether there are alternative options to the input supplied by the merged firm that downstream firm B could use following complete foreclosure by the merged firm.

We suggest that, in vertical merger reviews, the Commission consider using the above margin test on *ability* to foreclose downstream rivals.

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[20] See Kadner-Graziano (2025), *supra* n. 3, and, in particular, J. A. Ordover, G. Saloner, and S. C. Salop, 1990, "Equilibrium vertical foreclosure", *American Economic Review*, Vol. 80, No. 1, pp. 127-142.

3. In vertical mergers that potentially raise input foreclosure concerns, we suggest that the Commission consider using an *initial screen* and quantitative tests of the stakeholder effect and the ability and incentive to foreclose.

The margin test on ability to foreclose is consistent with theoretical models where there is price competition upstream and downstream. Therefore, our suggestions apply to vertical mergers in industries where firms compete mainly by setting prices.[21]

Initial screens in vertical merger reviews typically begin with an analysis of the merged firm's ability to raise downstream rivals' costs by stopping to supply inputs (or services) to them. The margin test can inform this analysis.[22] If the merged firm has such ability, one then evaluates its incentive to stop supplying the input by carrying out a profitability analysis ("vertical arithmetic").

We suggest continuing the initial screen with the margin test to gauge whether the merged firm will have the ability to foreclose downstream rivals partially by increasing the price at which it sells to them. One then can calculate the vGUPPIu score to gauge the merged firm's incentive to increase the input price to a given rival, and the vGUPPIr score to gauge the implied effect on the rival's incentive to increase the output price to its own customers. One also can gauge the magnitude of the stakeholder effect (net of the EDM effect if EDM is cognizable) using the vGUPPId score.[23] If vGUPPId and vGUPPIr are both positive, then the merged firm and the rival will want to raise their output prices post-merger, which will tend to reduce competition and consumer welfare.

- If the margin test indicates that the merged entity is unable to raise rivals' costs by selling the input at a higher price, the merger nevertheless may reduce competition through the stakeholder effect (as discussed in section II.1).[24]

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[21] They do not apply to *all* settings where firms set prices. For details and limitations, see Kadner-Graziano (2025) and Moresi and Salop (2013), *supra* n. 3.

[22] For example, if the upstream merging firm is constrained by a downstream firm's option to produce the input in-house, then it cannot raise that firm's costs post-merger (for more details, see Kadner-Graziano (2025), *supra* n. 3).

[23] There are two vGUPPId formulas: vGUPPId1 measures the magnitude of the stakeholder effect and, if EDM is cognizable, vGUPPId2 measures the net effect of the stakeholder effect and the EDM effect. See Moresi and Salop (2013), *supra* n. 3.

[24] I.e., vGUPPId > 0. If EDM is cognizable, the EDM effect may outweigh the stakeholder effect, i.e., vGUPPId < 0 is possible, in which case the merger increases competition (absent other concerns).

- If instead the margin test does not show that input prices are constrained, then one evaluates the magnitude of the merged firm's incentive to raise input prices to rivals (using vGUPPIu) and of the implied incentives of rivals to raise output prices (using vGUPPIr). Again, one also evaluates the stakeholder effect (net of the EDM effect if EDM is cognizable) using vGUPPId. Here, however, there are potentially strong feedback effects between the merged firm's pricing incentives upstream (i.e., the input prices charged to rivals) and its pricing incentives downstream (i.e., the output price charged to customers). These feedback effects may change the sign of the vGUPPI scores and thus it is important to account for them.[25]

We next illustrate this last point through two examples, using standard vGUPPI scores and also simultaneous vGUPPI scores that account for feedback effects.[26]

Example 4. *Firm S supplies inputs to firms A and B. The supplier has a constant unit cost of production, and firms A and B use one unit of input per unit of output. The supplier sets unit input prices to firms A and B, and then the latter set the output prices of their products. The pre-merger unit prices are $50 for the input and $100 for the output, and the pre-merger margins are 60% for both firm S and firm A. The diversion ratio from firm B to firm A is 40%. The total diversion ratio from firm A to firm B and all the other rivals that use the input of firm S is 80%. The pass-through rate of firm S is 50%. Finally, firms A and S merge, and EDM is cognizable. Then, vGUPPIu and vGUPPIr are positive while vGUPPId is negative: vGUPPIu = 48%, vGUPPIr = 12%, and vGUPPId = -6%.* ***Accounting for feedback effects, the simultaneous vGUPPIs are all positive: SvGUPPIu = 63.5%, SvGUPPIr = 15.9%, and SvGUPPId = 19.4%****. That suggests that the merger will lessen competition and cause all prices to increase.*

Intuitively, in Example 4 the raising rival's cost effect is relatively large and magnifies the stakeholder effect,[27] so that the EDM effect actually does not outweigh the stakeholder effect.

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[25] G. Das Varma and M. De Stefano, 2020, "Equilibrium Analysis of Vertical Mergers", *Antitrust Bulletin* 65, 445–458; G. Domnenko and D. S. Sibley, 2023, "Simulating Vertical Mergers", *Review of Industrial Organization* 62, 99-118. See also S. Lu, S. Moresi and S. C. Salop, 2007, "A Note on Vertical Mergers with an Upstream Monopolist: Foreclosure and Consumer Welfare Effects", working paper, https://www.crai.com/sites/default/files/publications/Merging-with-an-upstream-monopolist.pdf. These studies rely on merger simulation models.

[26] Moresi and Salop (2013), *supra* n. 3.

[27] The standard vGUPPId score measures the stakeholder effect holding input prices constant. The simultaneous vGUPPId score takes into account that a higher input price to firm B increases the merged firm's stake in firm B and hence increases the stakeholder effect.

Example 5*. The setting is the same as in Example 4, except that the pre-merger margins are 20% for firm A and 80% for firm S (instead of 60% for each) and the total diversion ratio from firm A to firm B and all the other rivals that use the input of firm S is 40% (instead of 80%). Again, vGUPPIu and vGUPPIr are positive while vGUPPId is negative: vGUPPIu = 16%, vGUPPIr = 4%, and vGUPPId = -24%.* ***Accounting for feedback effects, the simultaneous vGUPPIs are all negative: SvGUPPIu = -3.8%, SvGUPPIr = -1.0%, and SvGUPPId = -24.8%****. That suggests that the merger will increase competition and cause all prices to decrease.*

Intuitively, in Example 5, the EDM effect is relatively large and changes the raising rival's cost effect into a "reducing rival's cost effect".[28]

III. Remarks on conglomerate mergers

4. In mergers of complements, a recently-developed quantitative test can be used to identify whether the merged entity will have the *incentive* to decrease prices post-merger. We suggest the Commission consider using this test.

The Cournot effect is sometimes thought to apply generally to mergers of complements but applies only to very particular circumstances.[29] When the merging parties in a merger of complements face some competition in their respective markets, a question that arises is whether that competition exerts sufficient constraints on the merging parties for them to want to decrease prices post-merger (consistent with the Cournot effect) or whether the constraints are sufficiently strong for the merging parties to want, instead, to increase prices.

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[28] The standard vGUPPIu score measures the raising rival's cost effect holding the output price of the merged firm constant. The simultaneous vGUPPIu score takes into account that a reduction in the output price of the merged firm (due to EDM) reduces the margin earned on sales diverted from firm B and hence reduces the raising rival's cost effect. When the EDM effect is large and the stakeholder effect is small, as in Example 5, the total margin earned by the merged firm may be smaller than firm S's pre-merger margin on input sales to firm A, and thus the merged firm may want to *reduce* (not raise) the input price to firm B.

[29] NHMG, ¶ 117 states, "Notably, when producers of complementary goods are pricing independently, they will not take into account the positive effect of a drop in the price of their product on the sales of the other product. Depending on the market conditions, a merged firm may internalize this effect and may have a certain incentive to lower margins if this leads to higher overall profits (this incentive is often referred to as the 'Cournot effect'). In most cases, the merged firm will make the most out of this effect by means of mixed bundling, i.e. by making the price drop conditional upon whether or not the customer buys both products from the merged entity."

Lerner and Tirole (2004) found the existence of such a point.[30] Kadner-Graziano (2023) defines that point for mergers of complements.[31] The merger test developed in that paper is practical, transparent, and requires few quantitative inputs. It can help the Commission assess whether, as part of its ability, incentives, and effects framework, the merged entity would have an incentive to decrease prices (thereby benefiting consumers) or to increase prices (thereby harming consumers). In mergers where harmful effects need to be weighed against beneficial effects (or merger-specific "efficiencies"), the test can help assess whether those efficiencies would materialize at all.

IV. Conclusion

Our comments on the Guidelines highlight five points regarding non-horizontal merger review. The first three points relate to vertical mergers:

1. Vertical mergers can lessen competition and reduce consumer welfare via the *stakeholder effect*. The Guidelines do not mention the stakeholder effect. We suggest the Commission include the stakeholder effect in the updated merger guidelines as an additional theory of harm.

2. The Commission can use a recently-developed, practical, and transparent *margin test* to assess whether a merged entity will have the *ability* to foreclose its downstream rivals by still selling the related product (or service) to them, but at a higher price than pre-merger. While a relatively small margin earned on the related product might be evidence that the *incentive* to foreclose is relative strong, it also might be evidence that the *ability* to raise rivals' costs is limited.

3. The margin test for the ability to foreclose and the vGUPPI scores for the incentive to foreclose are complementary quantitative tools that the Commission can use in vertical mergers that raise input foreclosure concerns. We suggest an initial screen that is based on those quantitative tools and consistent the current Guidelines.

[30] J. Lerner and J. Tirole, 2004, "Efficient Patent Pools", *The American Economic Review*, Vol. 94, No. 3 (Jun., 2004), pp. 691- 711, see p. 697.
[31] Kadner-Graziano (2023), *supra* n. 3.

The next two points relate to mergers of firms selling products or services that are complements for one another:

4. The Cournot effect, a possible efficiency in mergers of complements described in the Guidelines, materializes only in specific circumstances. When it does not materialize, the merging parties may have an incentive to increase (rather than decrease) prices post-merger.

5. The European Commission can use a recently-developed, practical, and transparent test based on margin data to assess whether a merged entity will have the *incentive* to decrease or increase prices. This can support the Commission's review of mergers of complements in assessing incentives and therefore inform on potential effects.

The European Commission can use these findings to support its review of vertical mergers and mergers of complements when assessing ability, incentives, and potential effects.