Assessing the Potential for Incentives to Raise Prices in Multi-Sided Platform Mergers

Ildiko Magyari and Aron Tobias

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Introduction

One of the principal anticompetitive concerns raised in the context of horizontal mergers is the potential for the merging parties to have the incentive and the ability to increase prices post-transaction. [1] While there are well-established methodologies that merger practitioners routinely use to assess such concerns, evaluating firms' pricing incentives in the context of horizontal multi-sided platform mergers is still an emerging area of active research. The relatively sparse understanding of this issue does not mean it is not a significant one. With the spectacular growth of the technology sector in the last decades

and the intense mergers-and-acquisitions activity in this sector, antitrust authorities in the United States and in other jurisdictions around the globe have dedicated more and more resources to the control and enforcement of platform mergers. Indeed, the 2023 Merger Guidelines devote an entire subsection, Guideline 9, [2] to explaining in detail that "when a merger involves a multi-sided platform," the U.S. Department of Justice and the Federal Trade Commission are committed to "examin[ing] competition between platforms, on a platform, or to displace a platform." [3]

This article reviews the tools available in the economics literature for assessing the potential for anticompetitive pricing incentives in the context of horizontal multi-sided platform mergers. In the last decades, Gross Upward Pricing Pressure Indices (hereinafter "GUPPIs") developed by economists have become the standard practice for measuring pricing incentives potentially arising from mergers in one-sided markets. However, these GUPPIs for one-sided markets are not suitable for analyzing multi-sided platform mergers, given the necessity of taking into account an array of complexities brought about by the existence of interactions between different sides of a multi-sided market. This is a challenging task, and thus not many papers in the economics literature have taken on the issue. The goal of this article is to review these papers, to summarize the intuition behind these GUPPIs, and to outline the unique challenges associated with applying them to multi-sided platform mergers. We conclude by observing that more comprehensive approaches will be required to further broaden the understanding of channels through which incentives for unilateral price increases may arise in the context of multi-sided platform mergers.

GUPPIs and Mergers of Firms Facing a One-Sided Pricing Problem

GUPPIs are among the most widely used tools by merger practitioners for screening horizontal mergers between firms facing a one-sided pricing problem. [4] This tool allows for scoring the potential for incentives of the merging parties to engage in a unilateral increase in prices post-transaction, which diverts sales made by the post-transaction business of the acquiring firm.

To illustrate this, consider a simple example. Suppose that two hypothetical firms compete horizontally, and Firm 1 acquires Firm 2. If the merged entity were to increase the price of the product sold by Firm 1, then it would lose some of its customers. Part of these lost customers would be diverted to the merged entity's competitors, but others would switch their purchases to the product sold by the acquired target, Firm 2. Thus, the merged entity would register a loss on customers who were diverted to the competitors'

products but would recapture sales and register a gain on customers who switched to Firm 2's product. If these relative gains are higher than the relative losses from a price increase on Firm 1's product, the merged entity may find it profitable and thus have the incentive to unilaterally increase the price of Firm 1's product post-transaction. GUPPIs score such incentives, as they are the ratio between the gains and losses registered by the merged entity from a unilateral price increase in one of the merging parties' products post-transaction. [5] The larger this ratio is, the greater the potential incentive for the merged entity to increase the price of its products.

Multi-Sided Platforms and Upward Pricing Pressure

Multi-sided platforms are nowadays ubiquitous in a wide range of industries—from social media to streaming services to credit-card payment systems to ride-hailing services. [6] The defining feature of multi-sided platforms is that a platform operator serves two (or more) distinct sets of consumers, which gives rise to complex network effects. [7] One example of this is an interactive streaming platform that serves both viewers and content providers (and possibly also transacts with advertisers). Users on such platforms tend to appreciate the presence of a large number of other users. [8] This is an illustration of *direct network effects*: value is derived directly from the number of other users on the *same* side of the platform. [9] In addition, viewers' demand for the platform's services depends on the quantity and quality of media content, while content providers' willingness to engage in business with the platform also depends on how many subscribers the content is expected to reach. This highlights the importance of *indirect network effects*: on each side of the platform market, participants value the number of users on the *other* side of the platform. [10] Given these network effects, the analysis of pricing pressure that may result from horizontal mergers of multi-sided platforms is complicated by the fact that, in the presence of network effects, a change in any one price on any side of the market generically brings about a whole universe of changes across all sides of the platforms, both within and between the merging platforms.

Academic economists have dedicated substantial efforts to gaining a deeper understanding of multi-sided platform markets, pioneered by the seminal articles of Jean-Charles Rochet and Economics Nobel Prize laureate Jean Tirole. [11] From the perspective of competition-policy enforcement, the 2023 Merger Guidelines list a variety of novel conduct through which platforms could potentially restrain competition both *between* and *within* platforms. [12] The focus of this article is on the question of incentives to raise prices subsequent to a horizontal merger of two multi-sided platforms.

A pivotal step toward expanding the frontier of research into the measurement of unilateral incentives to increase prices post-merger in two-sided platform markets has been made by Pauline Affeldt, Lapo Filistrucchi, and Tobias J. Klein, [13] as well as by Andreea Cosnita-Langlais, Bjørn Olav Johansen, and Lars Sørgard. [14] These economists extend to two-sided markets the GUPPI approach initially developed for scoring pricing incentives of firms facing one-sided pricing problems. [15] These two-sided GUPPIs score two-sided business operators' incentives to increase post-merger prices on one side of their business, by taking into account the combined amount of gains and losses *across the two sides of the business* that would result from a price-increasing strategy by the post-merger entity.

The presence of network effects complicates this gain–loss analysis. More precisely, an increase in the price on one side of the business would divert some of its customers to the same side of the other platform within the merged entity. The gain–loss analysis of this effect is conceptually identical to the logic behind one-sided GUPPIs discussed above: the platform that raised its price would register a loss on customers who are diverted to competitors, but this loss would be partially mitigated by a gain on customers who switched to the product on the same side of the other merging platform. At the same time, the presence of indirect network effects implies that participants on a platform value the number of users on the *opposite* side of the same platform. Therefore, the aforementioned diversion of customers caused by a price increase may also divert away some of the participants on the *other* side of the merging platform that recorded the initial price increase.

Such diversion of customers from the other side of the platform would result in additional losses to the merged entity—losses that would not result from a price-increasing strategy in the context of horizontal mergers of one-sided businesses. Some of those diverted participants on the other side of the platform recording the initial price increase, however, would switch to the product on the analogous side of the *other* merging platform. Accordingly, the merged entity would register a gain on participants who switched to the product on the other side of the other merging platform.

To illustrate the complexities associated with measuring GUPPIs in the context of two-sided platforms, consider a hypothetical example with two print newspapers, Newspaper A and Newspaper B. The traditional print-newspaper industry can be conceived of as a platform market, with readers on one side and advertisers on the other. Readers' demand for a newspaper generally depends on the paper's advertisement content (i.e., if readers find the ads informative in addition to other content of the paper, they likely have higher demand for the paper; however, if they dislike ads, more ads in the paper can reduce readers' demand for the newspaper). However, advertisers' demand for the newspaper's

ads services depends on how many readers their ads reach. Suppose that Newspaper A and Newspaper B undergo a horizontal merger and the two newspapers are now under a common management. Given that the merging entities are two-sided businesses characterized by direct and indirect network effects, if the merged entity were to raise the price of advertising in Newspaper A, the potential effects of such a price increase would be fourfold:

(i) First, for a higher ads price charged by Newspaper A, its advertisers would directly reduce demand for the ads services offered by Newspaper A.

(ii) Second, the resulting lower number of ads would affect (either positively or negatively, depending on whether readers like the ads) the number of readers Newspaper A can attract.

(iii) Third, some of the advertisers unsatisfied with the higher price charged by Newspaper A would switch to and publish their ads in Newspaper B instead.

(iv) Finally, a higher number of ads in Newspaper B would affect (either positively or negatively, depending on whether readers like the ads) the number of readers Newspaper B can attract.

It is challenging to capture all these four effects of the increase in a single price on the ads side of the business and the combined total gains and losses implied by these for the merged entity.

Affeldt et al. (2013) laid out a rigorous conceptual framework that allowed for the quantification by a single index of all the four channels through which customer diversion may occur. In the spirit of the GUPPI for one-sided markets, this index is based on the assumption that when the price of a product on one side of the business of the merging entities is changing, all other prices on both sides of the merging firms' businesses remain constant. However, in reality, in response to a price change on one side of a merging platform, prices on the other side of the platform as well as prices on both sides of the other merging platform will change.

Cosnita-Langlais et al. (2021) point this out and propose a set of more accurate GUPPIs for two-sided markets that takes into account the possibility that an increase in price on one side of the market subsequent to a two-sided platform merger may result in a simultaneous change in the price on the other side of the same platform that recorded the initial price increase. They argue that this is a within-platform rebalancing effect in the two-sided GUPPIs, which the index proposed by Affeldt et al. (2013) does not account for.[16] Thus, by taking this rebalancing effect into account, the GUPPIs proposed by Cosnita-

Langlais et al. (2021) are suitable for capturing one additional effect beyond those accounted for by the index proposed by Affeldt et al. (2013).

To illustrate this, consider again the hypothetical newspaper example from above, and suppose that readers derive value from ads and thus the indirect network effect is positive. If Newspaper A raised the price of its ads services after the merger with Newspaper B, then the demand for those services would fall and so would readers' demand for Newspaper A. [17] The merged entity would now have a potential incentive to *lower* the price it charges Newspaper A's *readers*. This is because a lower price on the reader side would attract more readers. This, in turn, would attract more advertisers even at the higher price of Newspaper A's ads services, given that advertisers positively value readership due to the indirect network effect. The presence of more advertisers coupled with the higher price of ads services translates to enhanced profits on the ads side of the platform. [18]

The within-platform rebalancing effect identified by Cosnita-Langlais et al. (2021) is a significant step toward the construction of more robust two-sided GUPPIs. However, in addition to the within-platform rebalancing effects accounted for by Cosnita-Langlais et al. (2021), there may be additional price changes in the context of two-sided platform mergers that none of the existing GUPPIs encapsulate, such as changes in the prices on either side of the *other* merging platform when an increase in the price on one side of one of the merging platforms is contemplated as part of a price-increasing strategy. Thus, a fuller understanding of all the potential effects of the increase in a single price following a multi-sided platform merger will require more work and broader approaches.

Conclusions

This article reviews the economics literature on GUPPIs developed for scoring incentives to unilaterally increase prices after a merger of multi-sided platforms. It highlights that such GUPPIs must account not only for a diversion of customers between the merging platforms but also for a diversion of customers on both sides of each of the merging platforms. Since multi-sided platforms are characterized by direct and indirect network effects, the diversion of customers on each side of each of the merging platforms in response to a price increase on one side of one of the merging platforms is an inherent feature of multi-sided platform mergers. The article highlights that capturing such complicated patterns of diversion is a challenging task and summarizes the advancements the economics literature has made in this regard. It concludes that more comprehensive approaches will be required to further broaden the understanding of all the potential channels through which incentives for unilateral price increase may arise in the context of multi-sided platform mergers.

Endnotes

1. See U.S. Department of Justice and Federal Trade Commission (2023): "Merger Guidelines," available at https://www.justice.gov/d9/2023-12/2023%20Merger%20Guidelines.pdf, date of access: April 2, 2024 (hereinafter "2023 Merger Guidelines").

2. 2023 Merger Guidelines, pp. 23–26.

3. 2023 Merger Guidelines, p. 23, capitalization altered.

4. See, among others, Joseph Farrell and Carl Shapiro (2010): "Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition," *The B.E. Journal of Theoretical Economics*, 10, 0000102202193517041563, available at https://doi.org/10.2202/1935-1704.1563, date of access: April 2, 2024 (hereinafter Farrell and Shapiro (2010)); Serge Moresi (2010): "The Use of Upward Price Pressure Indices in Merger Analysis," *The Antitrust Source*, February 2010 (hereinafter Moresi (2010)); and Jerry Hausman, Serge Moresi, and Mark Rainey (2011): "Unilateral Effects of Mergers with General Linear Demand," *Economics Letters*, 111, 119–121.

5. Formally, the GUPPI associated with a unilateral increase in the price of the product sold by Firm 1 is computed by dividing the additional profit registered on customers who switched to Firm 2's product by the loss of sales revenues registered on customers who were diverted away from Firm 1's product. See Moresi (2010).

6. See Marc Rysman (2009): "The Economics of Two-Sided Markets," *Journal of Economic Perspectives*, 23, 125–143 (hereinafter Rysman (2009)).

7. According to the definition given in the 2023 Merger Guidelines, "[p]latforms provide different products or services to two or more different groups or 'sides' who may benefit from each other's participation" (p. 23).

8. See Michael L. Katz and Carl Shapiro (1994): "Systems Competition and Network Effects," *Journal of Economic Perspectives*, 8, 93–115; and Joseph Farrell and Paul Klemperer (2007): "Coordination and Lock-In: Competition with Switching Costs and Network Effects," in *Handbook of Industrial Organization*, edited by Mark Armstrong and Robert H. Porter, Amsterdam: Elsevier, volume 3, 1967–2072 (hereinafter Farrell and Klemperer (2007)).

9. Farrell and Klemperer (2007, p. 1974, emphasis in the original) explain this as follows: "A good exhibits *direct* network effects if adoption by different users is complementary, so that each user's adoption payoff, and his incentive to adopt, increases as more others adopt. Thus users of a communications network or speakers of a language gain directly when others adopt it, because they have more opportunities for (beneficial) interactions with peers."

10. According to Rysman (2009, p. 127), "a good exhibits an indirect network effect if demand for the good depends on the provision of a complementary good."

11. See Jean-Charles Rochet and Jean Tirole (2002): "Cooperation among Competitors: Some Economics of Payment Card Associations," *The RAND Journal of Economics*, 33, 549–570; Jean-Charles Rochet and Jean

Tirole (2003): "Platform Competition in Two-Sided Markets," *Journal of the European Economic Association*, 1, 990–1029; and Jean-Charles Rochet and Jean Tirole (2006): "Two-Sided Markets: A Progress Report," *The RAND Journal of Economics*, 37, 645–667.

12. Examples of such conduct that the 2023 Merger Guidelines (p. 25) list include: mergers involving two platform operators that eliminate competition between them; conflicts of interest created by a platform operator's acquisition of a platform participant; exclusion of platform participants' competitors by acquiring firms that provide services facilitating user participation on multiple platforms; and exclusion of rival platforms by acquiring firms that provide services facilitating the operation of platforms.

13. See Pauline Affeldt, Lapo Filistrucchi, and Tobias J. Klein (2013): "Upward Pricing Pressure in Two-Sided Markets," *The Economic Journal*, 123, F505–F523 (hereinafter Affeldt et al. (2013)).

14. See Andreea Cosnita-Langlais, Bjørn Olav Johansen, and Lars Sørgard (2021): "Upward Pricing Pressure in Two-Sided Markets: Incorporating Rebalancing Effects," *International Journal of Industrial Organization*, 74, 102692, available at https://doi.org/10.1016/j.ijindorg.2020.102692, date of access: April 2, 2024 (hereinafter Cosnita-Langlais et al. (2021)).

15. The research article by Farrell and Shapiro (2010) is one of the methodological foundations of the concept of upward pricing pressure (in the context of one-sided markets). These authors' upward-pricing-pressure index is similar to the GUPPI proposed by Moresi (2010) as discussed in Section 2 above, with the important difference that the Farrell–Shapiro index takes into account potential efficiency gains in the form of cost savings brought about by the merger, whereas the GUPPI does not. This explains the letter "G" (for "gross") in the acronym GUPPI—*cf.* Moresi (2010, p. 6): "the GUPPI measures only the upward pricing component before netting out the downward pricing pressure from efficiencies."

16. *Cf.* Cosnita-Langlais et al. (2021, p. 2): "in response to a price increase on one side, the insider's other price may either increase or decrease, feeding back into the price on the side that the [index] is supposed to analyze." The authors characterize this rebalancing effect as a "within-firm across-sides effect" (*ibid.*, p. 6).

17. This is true only under the supposition that readers like ads: if fewer ads appear in Newspaper A after the increase in the price of ads services, then fewer readers will find Newspaper A attractive.

18. Cosnita-Langlais et al. (2021, p. 3) explain this downward pressure on the price on the reader side of the platform as follows: "The reason for the price drop on the [reader] side is that increasing the margin (by a price increase) on the [advertiser] side increases the incentive to raise participation on the [reader] side, since this extra participation attracts more high-margin sales on the [advertiser] side."

Authors

Ildiko Magyari

Cornerstone Research; Columbia University

Ildikó Magyari applies econometric and economic theory techniques to antitrust and competition issues, with a focus on mergers and acquisitions (M&A), merger investigations, and related antitrust matters. Dr. Magyari...

Aron Tobias

Syracuse University

Aron Tobias serves as a tenured Associate Professor of Economics at Syracuse University's Maxwell School of Citizenship and Public Affairs. He received his Ph.D. in Economics from Yale University in 2016 and joined the...

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