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Message from the Chair

Welcome to the Summer 2017 edition of the Transportation and Energy Industries Committee’s Newsletter. On behalf of the entire Committee I would like to thank you for your participation and welcome you to sit back and enjoy the content we
hope to provide, or – if you have the interest and energy – to contribute actively to the dialogue and work of the Committee. Obviously we are also eager to hear from you about how we might contribute more usefully to your practice – please reach out to any of us with your ideas or preferences.

Turning to this edition of our Newsletter, we are proud to present four full-length articles that we hope will be of interest. In the first, Matthew J. Piehl and Daniel S. Graulich of Hogan Lovells discuss the implications of the district court decision in In re Delta/AirTran Baggage Fee Litigation granting summary judgment against the plaintiffs’ claimed conspiracy claims, largely predicated on earnings call statements by the two airlines. Shifting focus to energy markets, Shaun Ledgerwood and Jeremy Verlinda of The Brattle Group examine antitrust and other theories of liability advanced in the recent *Brent* and *Merced* cases against alleged “manipulation” of market indices in petroleum and electricity markets; and Andrea Asoni and Yianis Sarafidis of Charles River Associates examine two economic tools – the so-called “mHHI” and “mGUPPI” – that may be useful in evaluating partial acquisitions in the energy sector. Finally, drawing our attention south of the border, Gerardo Calderon of Baker & McKenzie Abogados in Mexico City examines COFECE’s (the Mexican competition authority) recent heightened focus on antitrust issues in the transport and energy sectors, and what we might expect going forward.

Next, we offer brief summaries of the three sessions the TEI Committee sponsored at this year’s Antitrust Section Spring Meeting: “*Competition and Consumer Policy in the Green Economy*;” “*Competition and Consumer Law Issues with Customer Profiling*;” and “*HSR Exemptions: Running Out of Gas*?” Each of these sessions was well attended and well received, and we express again our appreciation to the presenters and session chairs who made them happen.

Finally, as in past issues, we provide a (non-comprehensive) synopsis of some of the matters we have been following in the energy and transportation sectors and a few that will have our attention in the coming year.

Meanwhile, we are busy working on several programming offerings in the coming year, which will dovetail with important Section-wide programming, in particular:

- The Merger Practice Workshop - September 28, 2017 in Washington, D.C.
- Antitrust Fall Forum - November 16, 2017 in Washington, D.C.

Please stay tuned for more information about our brownbags and other programming, and in the meantime, happy reading!

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Chair, Transportation and Energy Industries Committee

2016-2017
Economic Tools for Gauging the Competitive Effects of Partial Acquisitions in the Energy Sector

By Andrea Asoni and Yianis Sarafidis

I. Introduction

Joint ventures and other joint ownership relationships are prevalent in the energy sector. For example, companies may collectively own a pipeline that is used to transport the natural gas that they produce or oil exploration companies may jointly work to develop a new oil field. As a result, mergers in this sector often involve the acquisition of minority positions, referred to as “partial acquisitions.” While partial acquisitions do not completely eliminate competition between the merging parties, they have the potential to change the incentives of the merging parties and harm competition, and thus are routinely reviewed by the U.S. antitrust agencies. In fact, under certain conditions, a partial acquisition might be predicted to lead to worse competitive outcomes than a full merger, as discussed in the following sections. The two economic tools discussed hereafter, the modified HHI and the modified GUPPI, are key to understand the effects of partial acquisitions on the incentives of the merging parties, on prices, and other aspects of competition.

Two recent examples are the FTC’s review of the Enbridge/Spectra merger and of the acquisition of The Williams Companies by Energy Transfer Equity (“ETE”). The review of the Enbridge/Spectra merger was concerned with a competitive overlap in the transportation of natural gas in three production areas off the coast of Louisiana: Enbridge was the sole owner of the Walker Ridge Pipeline, while Spectra indirectly owned a 40% interest in the nearby Discovery Pipeline. The review of ETE/Williams was concerned with a competitive overlap in firm (i.e., guaranteed) capacity to deliver natural gas in Florida between Florida Gas Transmission (“FGT”) and Gulfstream, two pipeline operators. ETE owned a 50% interest in FGT, while Williams owned a 50% interest in Gulfstream. In both cases, the FTC investigated, among other things, the post-merger firms’ ability to influence the firm in which it holds a minority position and how the respective transactions would alter the parties’ incentives to compete.

The prevalence of partially-owned midstream operations and their implications for merger analysis also was recently discussed by John R. Seward in the Winter 2016-2017 issue of this newsletter. Seward noted that “in examining areas of overlap, the parties will need to account for not only wholly-owned operations, but also partially-owned operations. This is particularly pertinent to

57 Andrea Asoni is an Associate Principal and Yianis Sarafidis is a Vice President in the Competition practice in the Washington office of Charles River Associates. The views expressed herein are the views and opinions of the authors and do not reflect or represent the views of Charles River Associates.

58 For example, the gathering, processing, transportation, storage, and wholesale marketing of oil and gas.
midstream deals because pipelines are commonly owned through a joint venture structure."

In light of the prevalence of partially-owned and joint-ventures operations in the energy sector, in this article we discuss two economic tools used by economists, including those at the antitrust agencies, to gauge the competitive effects of partial acquisitions: (1) the modified Herfindahl Hirschman Index ("mHHI") and (2) the modified Gross Upward Pricing Pressure Index ("mGUPPI"). The modified HHI ("mHHI") and the modified GUPPI ("mGUPPI") generalize their traditional counterparts (the HHI\(^60\) and GUPPI\(^61\) respectively) to account for partial ownership relationships between market participants. The mHHI serves as a tool for measuring market concentration and the change in market concentration induced by a merger, as is the traditional HHI when firms are wholly-owned. As such, it is used in the context of a structural analysis of a merger. The mGUPPI serves as a tool for scoring the unilateral effects of a merger and, as such, it is used in the context of a competitive effects analysis, as is the traditional GUPPI when firms are wholly-owned. Both the mHHI and the mGUPPI (like their traditional counterparts) are meant to be used as screens early on in a merger investigation and cannot substitute for a more complete and thorough economic analysis of the likely competitive effects of a merger.

This article is intended to illustrate the intuition behind these two indices and, in turn, open a window on how the economists at the Agencies may use these tools to analyze partial acquisitions and joint ventures.

II. The Modified HHI ("mHHI")

The traditional HHI is the most widely accepted methodology for measuring market concentration. It is calculated as the sum of the squares of the market share of each market participant. For example, if a market consists of four firms each with a 25% share, the HHI would be equal to 25^2 + 25^2 + 25^2 + 25^2 = 2,500. In merger analysis, antitrust agencies consider the absolute post-merger HHI and the change in the HHI (referred to as the "delta HHI") resulting from the merger. Returning to our earlier example, if two firms in that market merged, then the post-merger HHI would be 50^2 + 25^2 + 25^2 = 3,750, with a delta HHI of 1,250 (= 3,750 – 2,500). In general, if the change in the HHI resulting from the merger is relatively small, or if the post-merger HHI is low, then a merger normally is deemed to be unlikely to have any adverse competitive effects.\(^62\)


\(^{60}\) HHI is discussed in Section 2 infra.

\(^{61}\) GUPPI is discussed in Section 3 infra.

\(^{62}\) Notice that the delta HHI is equal to two times the product of the merging firms’ market shares that is 2 x 25 x 25 = 1,250. This is a general property that extends beyond this example when firms are wholly-owned. As we shall see below, when firms are partially-owned, the delta HHI can be more or less than two times the product of the merging firms’ market shares. That is, a partial merger may increase market concentration by more than the full merger.
The mHHI is a generalization of the traditional HHI that accounts for partial cross-ownerships among the market participants.\textsuperscript{63} To calculate the mHHI one needs to know: (1) the market shares of the various market participants (as for the traditional HHI), (2) the ownership (i.e., financial) interest that each owner has in the various firms in the market, and (3) the degree of influence (or partial control) that each owner has over the competitive decisions (e.g., price, quantity, advertising, innovation) of the firms that are partially owned.

A. \textit{The underpinnings of the HHI and the mHHI}

The traditional HHI can be derived formally from an economic model of quantity competition commonly also known as Cournot competition. When firms are wholly-owned, it can be shown that the traditional HHI is equal to the product of (1) the elasticity of the market demand and (2) the weighted average price-cost margin of the firms in the market, using the firms’ market shares as weights. Holding the elasticity of market demand constant, a higher HHI is associated with a higher average price-cost margin, which explains the intuitive appeal of the HHI: the higher the HHI, the higher the average price-cost margin and, in turn, the higher the degree of market power that firms have.

The mHHI can be derived in a similar fashion. The derivation accounts for partial cross-ownership interests among the various market participants in the following way. It is assumed that the quantity decision of firm A is controlled by a manager whose objective is to maximize the weighted average profits of the owners of firm A, taking into account the financial interests that these owners have in other market participants. The weights that the manager uses are assumed to be the degrees of influence that each owner has over the decisions of firm A. The degree of influence depends on the governance structure of the firm. In the context of the formal Cournot model, it can be shown that the mHHI is equal to the product of the market elasticity and the weighted average price-cost margin, just as the traditional HHI for the case of wholly-owned firms.

B. \textit{Examples and economic intuition for the mHHI}

Returning to our prior example, suppose that firm A acquired a 50% financial interest in firm B. Suppose also that following this partial acquisition, firm A would be deemed to have 60% influence over the decisions of firm B, such that the degree of influence is more than the financial interest. For example, this might be the case if firm A would control 60% of the seats on the board of directors of firm B.

Then, post-acquisition the manager of firm A will choose the quantity of firm A so as to maximize the sum of the profits of firm A ($\Pi_A$) and 50% of the profits of firm B ($\Pi_B$), that is $\Pi_A + 0.5 \times \Pi_B$. In other words, the manager of firm A behaves in a more accommodating way than pre-acquisition, but less so than in a full merger where the manager would maximize the sum of the profits of firms A and B. Likewise, post-acquisition the manager of firm B would maximize the weighted sum of the profits of the owners of firm B across all firms in the market, using as weights the degrees of influence that each owner has over firm B. That is, post-acquisition the manager of firm B would maximize: $0.4 \times (0.5 \times \Pi_B) + 0.6 \times (\Pi_A + 0.5 \times \Pi_B)$. The two terms in the parentheses are the profits of the two new owners of firm B; the manager gives 0.4 weight to the profits of the old owner of firm B and 0.6 weight to the profits of the new owner of firm B. As shown below, the change in the mHHI resulting from this partial acquisition would be 1062.5.

Therefore, in this example, the change in the mHHI (1062.5) is less than the change in the HHI in a full merger (1,250). But, this is not always the case. In general, starting from a market with wholly-owned firms, if firm A acquires a financial interest $\alpha$ (e.g., $\alpha = 50\%$) into firm B, which grants firm A a degree of influence $\beta$ (e.g., $\beta = 0.6$) over the competitive decisions of firm B, the delta mHHI is equal to the product of market shares of firms A and B and the term $\mu = 0.5 + 0.6 \times (1 - 0.5) = 1.0$. The first term ($\alpha$) reflects the fact that post-acquisition the acquiring firm A has a reduced incentive to compete against the acquired firm B. The second term ($\beta / ([\alpha \times \beta + (1 - \alpha) \times (1 - \beta)])$) reflects the fact that the acquiring firm A has now the ability to influence the competitive decisions of firm B to its benefit, thus influencing firm B to behave less aggressively. If the term $\mu$ is less than 2, then the partial acquisition would raise the level of market concentration by less than a full merger would. But, if the term $\mu$ is greater than 2, then the partial acquisition would raise the level of market concentration by more than a full merger would.

For example, suppose that firm A acquired a relatively small financial interest in firm B, say 20%, which granted, however, full control over the competitive decisions of firm B. This might be the case, for example, if the 20% ownership interest made firm A the owner with the largest financial interest in firm B. Then, we would have $\alpha = 0.2$ and $\beta = 1$, and the delta HHI is equal to the product of the market shares of the two merging firms times $\mu = 5.2\times 25 \times 25$. This is because post-acquisition the decisions of firm B are in the hands of a manager who puts more weight on maximizing the profits of firm A, not of firm B. As a result, the manager for firm B would want to restrict output for the benefit of firm A, much more so than in a full merger. Said differently, because firm A has a relatively small financial interest in firm B, firm A does not bear the cost of firm B restricting output to a greater degree than a wholly-owned firm B would find it profit maximizing.

C. The mHHI in practice

While the discussion of partial acquisitions in the U.S. Department of Justice and Federal Trade Commission’s 2010 Horizontal Merger Guidelines (henceforth,
“Guidelines”) does not explicitly mention the mHHI, the framework it offers for analyzing partial acquisitions is consistent with the Guidelines, and indeed, the antitrust agencies and private practitioners commonly use mHHI in assessing partial acquisitions. Specifically, the Guidelines emphasize and distinguish (1) the ability to influence the decisions of the acquired firm, and (2) the reduced incentive of the acquiring firm to compete against the partially acquired firm.\(^{64}\) The European Commission also has used modified concentration indices that account for partial ownership, for example in its decision in the Exxon/Mobil merger.\(^{65}\)

## III. The Modified Gross Upward Pricing Pressure Index (“mGUPPI”)

The traditional GUPPI is an index for scoring the unilateral effects incentives of a full merger in an industry where firms compete on price to sell differentiated products. In a merger of two firms A and B, there is a GUPPI from the perspective of firm A, which scores the incentives of firm A to increase price post-merger, and there is also a GUPPI from the perspective of firm B, which scores the corresponding incentives of firm B. The GUPPI from the perspective of firm A is calculated as the ratio between (1) the product of the pre-merger price-cost margin (measured in dollars) of firm B (\(M_B\)) and the diversion ratio from firm A to firm B (\(D_{RA}\)), and (2) the pre-merger price of firm A.\(^{66}\) The first term (that is, the product of the margin and the diversion ratio) is referred to as the *value of diverted sales*, a concept from the most recent Guidelines that has received much attention from antitrust commentators.\(^{67}\) The GUPPI from the perspective of firm B is calculated in an analogous way.\(^{68}\)

The GUPPI can be generalized to partial acquisitions. This generalization, which we refer to as the “mGUPPI”, requires one to know (1) the ownership interest and (2) the degree of influence that each merging firm has into its merging partner (pre- and post-acquisition). Of note, the mGUPPI does not require knowledge of market shares, just like the traditional GUPPI. This is because market shares and market concentration do not have a direct impact on unilateral effects. Rather,

\(^{64}\) Guidelines at §13.

\(^{65}\) Regulation (EEC) No 4064/89, Merger Procedure, Case No IV/M.1383 – Exxon/Mobil. Paragraph 256 (page 42) states that “[i]n order to appreciate the level of concentration in this market pre-merger and the impact of the merger, the Commission has estimated HHI indices that take into account the existence of cross shareholdings among most of the players in that market. This calculation was based on the work of Bresnahan and Salop.”

\(^{66}\) That is, the GUPPI from the perspective of firm A is equal to: \(M_B \times D_{RA} / P_A\).

\(^{67}\) Guidelines at §6.1.

unilateral effects analysis is focused on head-to-head competition between the merging firms. As stated in the Guidelines, “Agencies rely much more on the value of diverted sales than on the level of the HHI for diagnosing unilateral price effects in markets with differentiated products.”

A. *The economic principles behind the GUPPI and the mGUPPI*

As mentioned, the GUPPI is a relevant index when analyzing differentiated products. While natural gas or oil molecules are homogeneous, there are many aspects of differentiation such as location, supply assurance, the extent to which the product may have different levels of contaminants, the level of customer service, or even the cost of supply.

In industries where firms compete on price to sell differentiated products, a merger creates upward pricing pressure because a unilateral price increase by one of the merging firms that would be unprofitable absent the merger becomes profitable post-merger (all else equal). To see this, consider first the firm’s pre-merger incentives. Pre-merger, the firm is reluctant to increase price, because a higher price would drive down unit sales to the point that the price increase would be unprofitable; or else, the firm would have increased its price. Post-merger, if our firm revisits this calculus, it will realize that a fraction of the lost sales following a price increase will be diverted to the merging partner, and hence will be recaptured by the merging firm. The higher the margin of the merging partner and the higher the fraction of lost sales that are diverted to the merging partner (referred to as the diversion ratio), the greater is the value of these diverted sales. And, in turn, the more the merger relaxes the pre-merger constraint not to increase price. The GUPPI is nothing more than the value of diverted sales, but expressed as a fraction of the pre-merger price. That is, the GUPPI indexes the value of diverted sales.

When firms are partially-owned, one can generalize the traditional GUPPI in the same way as the traditional HHI was generalized to the mHHI, but focusing instead on pricing decisions (as opposed to quantity decisions). That is, we assume that the pricing decision of firm A is controlled by a manager whose objective is to maximize the weighted average profits of the owners of firm A, taking into account the financial interests that these owners have into other firms. The weights that the manager uses are again assumed to be the degrees of influence that each owner has over the decisions of firm A.

It can be shown that the mGUPPI will be a multiple of the traditional GUPPI, where the multiple will depend on the financial interest and degree of influence parameters.

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69 The same economic principle may also be applied to bidding markets where firms compete by placing bids. See, Serge Moresi, “Bidding Competition and the UPP Test,” Public Comment to Horizontal Merger Guidelines Review Project (2009), available at https://www.americanbar.org/content/dam/aba/publishing/antitrust_source/Feb10_Moresi2_25f.authcheckdam.pdf.
B. An Example and economic intuition for the mGUPPI

Consider a partial acquisition where a (wholly-owned) firm A acquires a financial interest $\alpha$ (e.g., $\alpha = 0.5$) in a (formerly wholly-owned) firm B, which grants firm A degree of influence $\beta$ (e.g., $\beta = 0.6$) over the competitive decisions of firm B. This partial acquisition will give rise to two effects.

First, post-acquisition the manager of firm A will choose the price of firm A so as to maximize the sum of the profits of firm A ($\Pi_A$) and 50% of the profits of firm B ($\Pi_B$), that is $\Pi_A + 0.5 \times \Pi_B$. This means that post-acquisition the manager of firm A will take into account the value of diverted sales to firm B. But, unlike what would occur in a full merger where the manager would internalize the full value of diverted sales, now the manager will internalize only a fraction $\alpha$ of the value of diverted sales. This is because firm A acquired only a partial interest into the profits of firm B. In other words, the mGUPPI from the perspective of firm A will be only a fraction $\alpha < 1$ of the value of the GUPPI in a full merger. Therefore, from the perspective of firm A (the acquiring firm), while the partial acquisition still induces upward pricing pressure, this is less pronounced than in a full merger.

Second, the partial acquisition will grant firm A influence over the pricing decisions of firm B. Naturally, firm A would like firm B to increase its price, as this would divert sales from firm B to firm A. Specifically, post-acquisition the manager of firm B will maximize the weighted average of the profits of the two new owners of firm B, giving weight $(1 - \beta) = 0.4$ to the profits of the old owner and weight $\beta = 0.6$ to the profits of the new owner. That is, the manager of firm B will maximize: $0.4 \times (0.5 \times \Pi_B) + 0.6 \times (\Pi_A + 0.5 \times \Pi_B)$. It can be shown that the GUPPI from the perspective of firm B will be equal to the product of the traditional GUPPI from a full merger multiplied by the term $\beta / [\alpha \times \beta + (1 - \alpha) \times (1 - \beta)]$. Notice that this is identical to the second term in the expression for $\mu$ in the mHHI section. And, as we previously saw in the example in Section II.B, when the acquiring firm’s degree of influence is significantly higher than its financial interest in the acquired firm, this term can be greater than one.

Therefore, from the perspective of firm B (the acquired firm), the partial acquisition may induce more or less upward pricing pressure relative to a full merger. The intuition is the same as discussed in the mHHI section: when the acquiring firm’s degree of influence over the acquired firm is significantly higher than its financial interest, then the acquiring firm can induce the acquired firm to increase its price by “too much,” since the acquiring firm obtains the benefits of this action, while passing on the costs to the remaining, non-controlling owners of the acquired firm.

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70 To see this, notice that maximizing the expression $0.4 \times (0.5 \times \Pi_B) + 0.6 \times (\Pi_A + 0.5 \times \Pi_B)$ is equivalent to maximizing $(\beta / [\alpha \times \beta + (1 - \alpha) \times (1 - \beta)]) \times \Pi_A + \Pi_B$, where $\alpha = 0.5$ and $\beta = 0.6$.

71 For example, when firm A acquires a 20% financial interest into firm B, which grants it full control of firm B, we have $\alpha = 0.2$ and $\beta = 1$. Accordingly, the GUPPI from the perspective of firm B is 5 times the GUPPI from a full merger.
IV. Conclusion

Both the mHHI and the mGUPPI were developed by antitrust practitioners to assist in assessing the potential for competitive concerns arising from partial acquisitions and joint ventures. A key insight from the development of these two tools has been that a partial merger may not necessarily be predicted to be less problematic—and may even be more problematic—relative to a full merger. This tends to be the case when the acquiring firm’s degree of influence over the target resulting from a partial acquisition is significantly higher than the financial interest acquired. A high degree of influence combined with a low degree of financial interest has the potential to generate perverse competitive incentives: in the extreme case where the acquiring firm acquires a miniscule financial interest but full control of the acquired firm, the acquiring firm might find it optimal to shut down the operations of the acquired firm entirely. In doing so, it will in fact benefit from the diverted sales but pay a small financial cost, as most of the cost will be borne by the other, non-controlling, owners of the target company. This outcome is worse, from a competitive standpoint, than what would happen under a full merger, where the acquiring firm would internalize the cost of shutting down the operations of the acquired firm.72

We reiterate that both the mHHI and the mGUPPI are helpful tools during the early stages of an investigation. They can help identify areas and products of concern as well as those that are unlikely to raise red flags. In other words, they can help focus the investigation, saving resources of both the antitrust agencies and the merging parties. However, like their traditional counterparts, they are not meant to be substitutes for a full economic analysis.

While not explicitly mentioned in the Guidelines, the mHHI and the mGUPPI are consistent with the discussion of partial acquisitions in the Guidelines. In particular, the Guidelines emphasize three avenues through which partial acquisitions might affect competition.73 First, a partial acquisition might lessen competition by giving the acquiring firm influence over the decisions of the acquired firm. Second, a partial acquisition might reduce the acquiring firm’s incentive to compete against the target because of the newly acquired financial interest in its profits. Third, it might facilitate the flow of competitively sensitive information between the two firms, potentially increasing the risk of coordination. While the first two competitive concerns mentioned in the Guidelines are incorporated into the mHHI and mGUPPI, the third concern is outside their scope, thus further underlining the importance of a full merger investigation that goes beyond mHHI and mGUPPI, and looks at all possible ways in which a partial acquisition affects competition.74

72 This, of course, also ignores other potential competitive benefits that could accrue to the acquired firm, such as the addition of the acquired firm’s intellectual property, know-how, key employees, supply contracts, etc.

73 Guidelines at §13.

74 For example, the consent agreement between the FTC and the parties in Enbridge/Spectra requires Enbridge to establish firewalls to limit its access to non-public information.