

## Review: Selected Research of Andrew Sweeting, New FTC Bureau of Economics Director

### *Economic Models That Reflect Real-World Facts*

W. Robert Majure, Andrew Sfekas, Ross Askanazi, and Laurien Gilbert

The Federal Trade Commission has named Andrew Sweeting as the new FTC Bureau of Economics Director, replacing Bruce H. Kobayashi, who is returning to George Mason University.<sup>1</sup> Professor Sweeting's appointment was unanimously approved by the FTC commissioners. Professor Sweeting, who will maintain his tenured position in the Economics Department of the University of Maryland, was an academic visitor with the Economic Analysis Group of the U.S. Department of Justice's Antitrust Division in 2017. He previously served on the faculties of Duke and Northwestern Universities.

Professor Sweeting's research has frequently explored nuances in economic modeling and the resulting implications for common questions in mergers and regulation as well as the field of industrial organization. Professor Sweeting should be expected to be adept at applying conventional analytical tools. As discussed below, Professor Sweeting's body of work also suggests that he is comfortable adapting economic analysis to fit key facts of a case when those facts do not fit easily into conventional analytical tools.

#### **Professor Sweeting's Analysis of Conventional (Static) Tools and Dynamic Models in Mergers**

A theme of Professor Sweeting's research addresses how accounting for interactions between firms over time (i.e., dynamic modeling) can yield different predictions than the frequently used static competitive effects models (e.g., GUPPIs, as well as market share or HHI analysis). For example, he has shown that in some cases conventional merger models can significantly underpredict the price increases following mergers or overpredict the downward pricing pressure of entry,<sup>2</sup> and that in other cases, conventional models can overpredict price increases.<sup>3</sup>

In his research, Professor Sweeting favors dynamic models that reflect more real-world industry features than conventional static models. These dynamic models require more complex modeling and data to reflect real-world

features such as product repositioning or firm entry and exit decisions in response to market changes, coordinated decisions by firms (e.g., tacit collusion), and uncertainty about rivals' costs or profitability. Some of Professor Sweeting's models reflecting these features are described next.

#### *The dynamics of post-merger product repositioning*

Professor Sweeting has written extensively about the effects of mergers on competition in industries with differentiated products. He argues that it is important to recognize that both the degree of differentiation between the merging parties and the degree of differentiation between the merging parties and their competitors are not fixed. As a result, modeling firm decisions about product differentiation can be an important component of modeling competition in an industry.

Professor Sweeting's study of radio station mergers,<sup>4</sup> for example, finds that merging stations increase their differentiation from one another (in terms of the artists they play), while decreasing the degree of differentiation with rivals. The increased differentiation of the merged parties' products reduces competitive pressures while the decreased differentiation with competitors intensifies competition between the merged stations and the remaining competitors. The overall effect on consumers depends on the extent to which the merged parties are likely to gain market share at the expense of competitors, rather than by expanding the market.

Professor Sweeting notes that acknowledging the ability of merging parties to "reposition" their products after a merger "help[s] to explain why models that treat product locations as fixed often do poorly at predicting how prices change after mergers and why competitors may choose to lobby an antitrust authority to prohibit a merger even when synergies are unlikely."<sup>5</sup>

*The dynamics of coordinating decisions*

Coordinated effects are often difficult to track in conventional models, which focus on unilateral incentives. Professor Sweeting has studied the extent of coordination between competitors in the radio industry, noting that radio stations in more concentrated markets are more likely to schedule commercial breaks that overlap with one another.<sup>6</sup> Because listeners cannot avoid overlapping commercials by switching radio stations, the coordinated strategy can result in a substantial boost to both station and advertiser profits from commercials. However, Professor Sweeting notes that, due to the nature of the market as a two-sided platform, radio stations must compete to attract not only advertisers but also listeners. As a result, firm coordination that raises profits can also benefit consumers because stations may compete on programming quality while coordinating commercial timing, or the increased profitability of coordinated advertising may induce new firms to enter the market.

Professor Sweeting also studied firm coordination in the wholesale electricity market in England and Wales in the late 1990s, demonstrating that static industry models can generate inaccurate predictions because they do not account for how firms interact with each other over time.<sup>7</sup> In particular, static models would have predicted increasing competition in this particular market, given the falling market concentration during that time. Professor Sweeting's analysis of six years of wholesale electricity data, however, showed that the two largest generators appear to have priced in a way that jointly increased their profits—an outcome consistent with tacit collusion, not increasing competition. He notes that each of these two generators could have offered lower-priced bids and obtained higher short-term profits, but the signals they sent each other by passing up these short-term profits allowed them to achieve higher profits in the long run.

*The dynamic of entry and incumbents' prices*

Professor Sweeting's coauthored work on entry explains why, in markets with certain features, the threat of entry alone may have strong competitive price effects. In particular, he and his coauthors have studied the "Southwest" effect—the often-observed tendency for airlines to substantially lower fares on routes where Southwest Airlines is a potential competitor, even if entry has not occurred.<sup>8</sup>

Professor Sweeting and his coauthors study this phenomenon by building a model that reflects the unique features of the airline industry. A key feature of their model is the identification of a peculiar complexity in the entrant's estimates of demand and marginal costs for flying a plane on any specific route. For some passengers that route is their entire trip, but for others it is only one in a variety of

connecting flights. This complexity motivates a key assumption in their model that Southwest has only partial information about incumbents' profitability.

After incorporating into their model real-world data on major air travel routes and the airlines that fly those routes, Professor Sweeting and his coauthors evaluate competing explanations for the Southwest effect. They find that the reduction in airfares is best explained by incumbents' attempts to deter Southwest's entry by taking advantage of Southwest's presumed uncertainty regarding the operating costs of the incumbent airlines. The incumbents might use low prices to signal to Southwest that it would face highly efficient competitors.

Professor Sweeting and his coauthors extend their analysis to test an implication of this finding: that incumbents would have more incentive to send such signals where Southwest has a moderate probability of entering and less incentive on routes where Southwest is likely to enter regardless of any signals from incumbents. They test this by modeling the effects of financial incentives or subsidies local governments or airports often offer to airlines for opening new routes. These subsidies can increase the probability that Southwest will enter a route. They find that a small subsidy can result in substantial savings to consumers in the form of lower incumbent fares on routes where Southwest's entry was unlikely without the subsidy. However, a subsidy can also decrease the incentive of incumbents to lower fares by raising the cost of deterring entry by Southwest.

*Dynamic effects in merger reviews*

In a working paper, Professor Sweeting and his coauthors model a typical interaction between firms in the same industry, with implications for merger review.<sup>9</sup> Economists often base their models on the assumption that firms know the marginal costs of all their rivals—for example, because they meet each other in the marketplace often enough to learn their competitors' costs over time. Professor Sweeting and his coauthors, however, introduce an assumption of asymmetric information in this analysis (i.e., that firms do not have full information about the marginal costs of their competitors), and show that "small uncertainty about persistent marginal costs can have very large effects on equilibrium prices, especially when a market comes to be dominated by two, relatively symmetric firms."<sup>10</sup> They show that conventional merger analyses, which do not account for this asymmetric information, can underpredict the price increase from a merger by significant amounts.

In another paper, Professor Sweeting and his coauthors argue that accounting for dynamic interactions can have significant, though more ambiguous, implications for merger predictions.<sup>11</sup> For example, when firms have limited knowledge about their competitors, there are multiple

strategies that they could consider optimal—and two merging firms that appear to face identical market conditions, but act differently, may simply have different beliefs about their competitors—making post-merger predictions depend on how the combined firm might reconcile these different beliefs. In addition, firms learning about their competitors' costs over time can change their interactions from one time period to the next—complicating the process of predicting the future from past behavior.

### **Professor Sweeting's Research on Mergers or Regulatory Issues in Specific Industries**

Much of Professor Sweeting's research described so far is motivated by key facts of specific industries. A few of his other papers are also worth noting as they delve into the details of a particular industry. These papers provide insight about not only Professor Sweeting's familiarity with these industries but also the manner in which he incorporates relevant facts in his analyses.

#### *Airlines—the importance of selection in re-positioning post-merger*

In a study of the competitive effects of mergers in the airline industry,<sup>12</sup> Professor Sweeting and his coauthors specifically highlight the need for courts and agencies to establish “clear connections to profitability or price effects” in their analysis of barriers to entry and product repositioning, in order to determine whether the amount of post-merger competition would in fact be likely to prevent prices from rising.<sup>13</sup> They show that standard models that do not account for the ability of airlines to select routes based on cost efficiencies relative to rivals can overstate the degree of competition that will remain after a merger of two airlines. Professor Sweeting and his coauthors build a model of route choice that accounts for this competitive dynamic and allows rival airlines to choose whether or not to begin offering service on routes where the merged airlines may have an effective monopoly based on their cost to serve that route. A comparison of the standard model to this more complex model shows that the standard model may overpredict entry by competitors and underpredict fare increases following a merger of two airlines serving the same routes.

In testing their theory, Professor Sweeting and his coauthors look at three mergers in the airline industry, as well as the merger between United Airlines and US Airways that was proposed in 2000 and abandoned in 2001 after the Department of Justice announced it would file suit to block the merger. In the completed mergers, Professor Sweeting and his coauthors find that failing to account for route selection understates average fare increases after airline mergers and overstates the degree to which rivals may reposition to compete with the merged airline.<sup>14</sup>

In the case of United's abandoned merger with US Airways, they focus on a proposed remedy in which a third carrier, American Airlines, would commit to provide nonstop service on several routes where the merging parties were nonstop duopolists.<sup>15</sup> The theory predicts, however, that because American Airlines would not be expected to make profits on some of these routes, and other carriers would be able to reposition in response to the merger, it would be an ineffective competitive constraint on the merged parties, consistent with the Department of Justice's decision to reject the remedy.<sup>16</sup>

#### *Music licensing—the importance of consumer preferences*

Professor Sweeting has also studied the effects of proposed fee changes in the music licensing industry. His model reflects some key features of the industry, including preferences among groups of radio listeners and different valuations by advertisers (the primary source of revenue for radio stations) of those different groups of listeners.<sup>17</sup> His model predicts more tempered effects of the proposed policy change than many industry insiders had anticipated.<sup>18</sup>

The proposed fee changes that Professor Sweeting analyzes are modeled after the Performance Rights Act introduced by Congress in 2009. The legislation (which was not passed) would have required radio stations to pay fees for musical performance rights in addition to the fees they already pay. As Professor Sweeting describes:

The legislation proposed that for music stations with revenues above some cap, [new] fees [for musical performance rights] would be determined as a percentage of advertising revenues, and would not depend on the exact amount of music that the station played. *Noncommercial stations and stations that provide primarily talk programming were exempt.*<sup>19</sup>

The impact of the proposed legislation was uncertain. Such fees were unprecedented in the United States and thus an analysis of historical data was not informative. Instead, commentators relied on theoretical arguments. Many industry insiders predicted that if the bill were passed, the additional fees would make it unprofitable for broadcasters to play music, and many broadcasters would switch to non-music programming.

Professor Sweeting's model predicts more tempered effects. His model predicts that fees equal to 10%–20% of station revenues would have “significant, and fairly rapid, effects on the number of music stations, but that the declines would not be as dramatic as some people in the broadcasting industry have suggested.”<sup>20</sup> His argument rests on a model of dynamic interaction that may seem complex but encapsulates a fairly simple intuition: that the effects of the additional fees would not make music programming unprofitable for as many broadcasters as predicted by industry insiders “for the simple

reason that lots of people prefer music programming, including many listeners who are particularly valued by advertisers.”<sup>21</sup>

### Synopsis

A recurring theme of Professor Sweeting’s research is an exploration of situations where typical static tools can generate misleading results. To reflect the complexities underlying these situations, he has employed models from various settings, including auctions and platform markets. He has often incorporated asymmetric information in his models to reflect the often important fact that different participants

in a market have better or worse information about the market compared to one another. In addition, he frequently works with models where the key strategic decisions have to be optimized dynamically as events unfold.

Modeling an industry or market is a balance between keeping the model tractable while also accounting for the specific real-world facts that matter. Professor Sweeting’s overall body of work suggests that he is comfortable adapting economic analysis to fit key facts of a case when those facts do not fit easily into conventional analytical tools.

<sup>1</sup> Federal Trade Commission, “Chairman Simons Announces Departure of Economics Bureau Director Kobayashi, Appointment of Sweeting,” December 23, 2019, <https://www.ftc.gov/news-events/press-releases/2019/12/chairman-simons-announces-departure-economics-bureau-director>.

<sup>2</sup> See, e.g., “Dynamic Oligopoly Pricing with Asymmetric Information: Implications for Mergers,” with Xuezhen Tao and Xinlu Yao (working paper, April 2018).

<sup>3</sup> See “The Effects of Mergers on Product Positioning: Evidence from the Music Radio Industry,” *RAND Journal of Economics* 41, no. 2 (2010): 372–397.

<sup>4</sup> *Ibid.*

<sup>5</sup> *Ibid.*, 373, citations omitted.

<sup>6</sup> “Coordination, Differentiation, and the Timing of Radio Commercials,” *Journal of Economics and Management Strategy* 15, no. 4 (2006): 909–942.

<sup>7</sup> “Market Power in the England and Wales Wholesale Electricity Market 1995–2000,” *The Economic Journal* 117, no. 520 (2007): 654–685.

<sup>8</sup> “A Model of Dynamic Limit Pricing with an Application to the Airline Industry,” with Chris Gedge and James W. Roberts, *Journal of Political Economy*, forthcoming.

<sup>9</sup> “Dynamic Oligopoly Pricing with Asymmetric Information: Implications for Mergers,” with Xuezhen Tao and Xinlu Yao (working paper, April 2018).

<sup>10</sup> *Ibid.*, 38.

<sup>11</sup> “Multiplicity of Equilibria and Information Structures in Empirical Games: Challenges and Prospects,” with Ron N. Borkovsky et al., *Marketing Letters* 26, no. 2 (2015): 115–125.

<sup>12</sup> “Repositioning and Market Power after Airline Mergers,” with Sophia Li et al. (working paper, June 2019).

<sup>13</sup> *Ibid.*, 2.

<sup>14</sup> *Ibid.*, 3.

<sup>15</sup> *Ibid.*, 21.

<sup>16</sup> *Ibid.*, 32.

<sup>17</sup> “Dynamic Product Positioning in Differentiated Product Markets: The Effect of Fees for Musical Performance Rights on the Commercial Radio Industry,” *Econometrica* 81, no. 5 (2013): 1763–1803.

<sup>18</sup> For example, Professor Sweeting observed that the National Association of Broadcasters (NAB) Radio Board Chairman, Steven Newberry, stated before the House Judiciary Committee that “the number of stations playing music would dramatically decrease” because of the act (*Performance Rights Act, Hearing Before the Committee on the Judiciary, House of Representatives*, 111th Cong., 1st session on HR 848, March 10, 2009 (oral testimony of Steven Newberry)).

<sup>19</sup> “Dynamic Product Positioning in Differentiated Product Markets: The Effect of Fees for Musical Performance Rights on the Commercial Radio Industry,” *Econometrica* 81, no. 5 (2013): 1763–1803 at 1765, emphasis added.

<sup>20</sup> *Ibid.*, 1800.

<sup>21</sup> *Ibid.*

**W. Robert Majure** is a vice president of Cornerstone Research. He is the former Director of Economics for the Antitrust Division of the Department of Justice, where he worked for almost twenty-five years. An expert in industrial organization, he worked on every merger challenge brought by the Antitrust Division during his nine years as Director, including Aetna/Humana, Anthem/Cigna, AT&T/T-Mobile, AT&T/Time Warner, GE-Electrolux, and USAir/American.

**Andrew Sfekas** is a senior economist of Cornerstone Research. He provides economic and financial analysis in complex antitrust and competition matters, with a specialty in the healthcare industry. Previously, he taught courses in industrial organization, health economics, and econometrics at Bryn Mawr College, Temple University, and Northwestern University.

**Ross Askanazi** is an associate of Cornerstone Research. Dr. Askanazi provides economic and financial analysis in antitrust and competition, market manipulation, and marketing-related matters.

**Laurien Gilbert** is an associate of Cornerstone Research. Dr. Gilbert provides economic and financial analysis in complex antitrust and competition matters.

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