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I. INTRODUCTION

In a 2008 paper published in this journal, I described the continuing success of coordinated interaction (hereinafter, collusion) theories in maintaining their role as an alternative analytical technique to the unilateral effects theories used in Federal Trade Commission (“FTC”) merger reviews.¹ While recent Agency commentary and guidelines have suggested a further shift in policy towards unilateral effects analysis,² collusion analyses remain entrenched in the internal files. Staff appears to apply the theory most compatible with the available facts.

After an overview of developments in merger policy, this paper compares the level and outcome of collusion and unilateral effects analyses over the 1993-2010 time period. Remarkably little change in relative activity is observed and challenge rates remain relatively constant once the samples are standardized for entry impediments.³ Focusing on the counts

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¹ Malcolm B. Coate, *Alive and Kicking: Collusion Theory in Merger Analysis at the Federal Trade Commission*, 4(2) *COMP. POL'Y INT'L.*, 3 (2008). The paper studied the application of collusion analysis to a sample of investigations undertaken by the FTC between 1993 and 2005. The results identified structure, homogeneous nature of the good, lack of buyer power, presence of evidence for the competitive concern and lack of efficiencies as the key factors in the FTC's decision on the ease of collusion.

² Federal Trade Commission and U.S. Dep't of Justice, *Commentary on the Horizontal Merger Guidelines*, (2006), available at <http://www.ftc.gov/os/2006/03/CommentaryontheHorizontalMergerGuidelinesMarch2006.pdf> [hereinafter *Merger Commentaries*; U. S. Dep't of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, Aug. 19, 2010 available at <http://www.ftc.gov/os/2010/08/100819hmg.pdf> [hereinafter *2010 Merger Guidelines*].

³ The Commission decides to challenge a merger at the end of an investigation when it has the required reason to believe that the merger is likely to substantially lessen competition. Most challenged mergers settle, while a few are litigated, and still others are abandoned by the parties.

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FTC evaluations*

of significant rivals, the data shows that both four-to-three and three-to-two mergers tend to end in challenges when entry evidence is strong. Moreover, a reasonable case can be made that the challenge rates are higher in homogeneous goods markets when five or more premerger rivals exist, although the small sample size limits this conclusion. Thus overall, facts, not theory, appear to affect FTC evaluations.

II. DEVELOPMENTS IN MERGER ANALYSIS

Introduced in the 1992 Merger Guidelines, unilateral effects analysis generally applies models of Bertrand competition to differentiated product markets and models of Cournot competition to homogeneous goods markets.⁴ In either situation, key facts (lack of close competition between the products of the merging firms in Bertrand competition and substantial supply elasticities for non-merging firms in Cournot competition) mandate the rejection of the unilateral concern, leaving the analyst to apply a traditional collusion analysis. These concepts were explained in more detail in the 2006 Merger Commentaries⁵ and the 2010 Merger Guidelines.⁶

Commentators suggest unilateral concerns became the dominant theory of concern, an assertion that tracks the common understanding of the Merger Guidelines.⁷ This hypothesis is compatible with evidence from a review of the text dedicated to either unilateral effects or collusion theories in three merger guidance documents issued during the last 20 years. The 1992 Merger Guidelines led with a discussion of collusion, allocating it almost four pages of text,⁸ then followed with unilateral effects analysis, presented in a little over three pages.⁹ The 2006 Commentaries on the Merger Guidelines reverse the emphasis, with unilateral concerns addressed first, with 11 pages used to explain the analysis.¹⁰ Collusion concerns followed with about 7 pages.¹¹ This preference for unilateral concerns continued into 2010, as the revised

⁴ U. S. Dep't of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, ANTITRUST TRADE REG. REPORT 1559 (1992).

⁵ Merger Commentaries, *supra* note 2.

⁶ 2010 Merger Guidelines, *supra* note 2.

⁷ See, e.g., Jonathon B. Baker, *Why Did the Antitrust Agencies Embrace Unilateral Effects?* 12(1) GEO. MASON L. REV. 31 (2003). Baker noted a recent (2002-03) revival in interest for collusion.

⁸ U. S. Dep't of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, ANTITRUST TRADE AND REGULATION REPORT, NO. 1559, 1992 at section 2.1.

⁹ *Id.*, at section 2.2.

¹⁰ Merger Commentaries, *supra* note 2, at 25-36.

¹¹ *Id.*, at 18-25.

Guidelines allocated 6.5 pages to unilateral concerns,¹² while the collusion analysis was limited to 3.5 pages.¹³ To summarize the trend, the percentage of pages dedicated to collusion issues can be shown to decline continuously from 59 percent to 39 percent to 35 percent. If the emphasis of the documents offers any insight, some movement in the investigational approach should be observed in the files.

In addition to the shift in emphasis, the rise in the importance of unilateral effects analysis also had an impact on market definition. Joseph Farrell & Carl Shapiro advance an Upward Pressure on Price (“UPP”) methodology for evaluating the competitive effect of a merger from information on diversion ratios, margins, and efficiencies.¹⁴ This model is integrated into the 2010 Merger Guidelines and serves to support the suggestion that market definition could be an after-thought in a merger review. Louis Kaplow puts forth an even more radical idea – unilateral analysis eliminates the intellectual viability of market definition.¹⁵

These concepts have not remained unchallenged. Joseph Simons & Malcolm Coate contend that Farrell & Shapiro need a benchmark for their analysis to differentiate substantial from insubstantial effects.¹⁶ Benchmarking may require market definition. Dennis Carlton raises a more serious problem, questioning the intellectual distinction between the unilateral and collusive concerns that underpins the entire analysis.¹⁷ Carlton observes that the standard Bertrand and Cournot models represent applications of static game theory, and this assumption gives rise to the firm’s unilateral ability to raise price.¹⁸ If the game is generalized to allow dynamic play, then, abstracting from the monopoly issue, collusion concerns are relevant.

Lost in the theoretical disputes, but clearly relevant to the policy analyst, is the question of monopoly. To the extent that the merger creates a single firm able to set price and restrict output, the core monopoly model of antitrust predicts the merger is likely to substantially lessen competition in all but the most extraordinary situations. Thus, in any study of competition policy,

¹² 2010 Merger Guidelines, *supra* note 2, at section 6.

¹³ *Id.*, at section 7.

¹⁴ See Joseph Farrell & Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, 10(1) B. E. J. OF THEORETICAL ECON. 1 (2010).

¹⁵ See Louis Kaplow, *Why Ever Define Markets?*, 124 HARV. L. REV. 437-516 (2010). For an alternative view, see Malcolm B. Coate & Joseph J. Simons, *In Defense of Market Definition*, ANTITRUST BULLETIN (forthcoming). The working paper version is available at <http://ssrn.com/abstract=1967208>.

¹⁶ See Joseph J. Simons & Malcolm B. Coate, *Upward Pressure on Price Analysis: Issues and Implications for Merger Policy*, 6(2) EUR. COMPETITION J. 377 (2010). This paper simulates the effect of an UPP policy and finds it would be much more aggressive than the status quo.

¹⁷ See Dennis Carlton, *Revising the Horizontal Merger Guidelines*, 6(3) J. COMP. L. & ECON. 619 (2010).

¹⁸ *Id.*, at 627-29.

To the extent that unilateral effects analysts have been counting monopoly concerns as unilateral issues, they have been over-counting the success of their innovative theories

it is necessary to first put aside the transactions that create or enhance a pure monopoly position. To the extent that unilateral effects analysts have been counting monopoly concerns as unilateral issues, they have been over-counting the success of their innovative theories. As seen in the next section, two-to-one mergers play a large role in FTC merger reviews.¹⁹

III. EMPIRICAL EVIDENCE AT THE FEDERAL TRADE COMMISSION

The most recent research file contains 333 market analyses associated with a sample of mergers filed under the Hart-Scott-Rodino Act²⁰ from fiscal year 1993 to 2010.²¹ To ensure data on a wide range of variables, only mergers with three or fewer competitive overlaps are studied. The 2008 study was based on a sample of 75 merger reviews undertaken with a collusion analysis after a clear finding of entry impediments.²² To compare the FTC's treatment of collusion investigations with its treatment of unilateral concerns analyses, the collusion sample was updated in 2010 to obtain a data set of 90 market studies.²³ The unilateral sample started with 192 market-level evaluations and deleted 92 two-to-one markets and 21 matters in which the evidence of substantial entry impediments could not be established.²⁴ This left a sample of 79 market studies for review. The two research objectives were to (1) shed light on any change in policy over the 1993-2010

¹⁹ Most of the two-to-one mergers represent small competitive overlaps associated with conglomerate transactions. Thus, these challenges almost always settle. In a few cases, the two-to-one merger is the core of the transaction, with the parties claiming easy entry, a broad market (hence to them, the merger is not two-to-one) or buyer power. A few such transactions are allowed, as the evidence shows the merger is not likely to substantially lessen competition.

²⁰ Hart-Scott-Rodino Antitrust Improvements Act of 1976, 15 U.S.C. § 18(a).

²¹ The sample was collected for a study of the effect of natural experiments, along with customer complaints and hot documents, on the merger challenge decision. For more details on the study, see Malcolm B. Coate, *The Use of Natural Experiments in Merger Analysis* (Nov. 17, 2011) (working paper, available at <http://ssrn.com/abstract=1853705>). While this data set is based on historical information, anomalies in the data are corrected and therefore various samples will not be perfectly backward compatible; instead, they represent the best available evidence at the time they were collected.

²² Coate, *supra* note 1.

²³ Following the procedure in the 2008 paper, three collusion matters were excluded because the merger raised strong failing firm/division concerns.

²⁴ In some cases, the memos suggested enforcement action could occur under both theories and the wording of the documents was reviewed to determine which theory would be the primary basis for a merger challenge. Because merger policy is law enforcement, the legal considerations were considered controlling. It is certainly possible that an economist looking at the same factual evidence would suggest certain matters be recoded from collusion to unilateral for differentiated goods and from unilateral to collusion for homogeneous goods.

TABLE 1 Theories of Concern by Era for FTC Merger Reviews (1993-2010)

	Unilateral Theory Cases	Win Rate	Collusion Theory Cases	Win Rate
Steiger Era	15	80%	19	47%
Pitofsky Era	31	71%	34	67%
Muris + Era	16	69%	20	80%
Commentaries Era	17	88%	17	82%
Overall	79	76%	90	69%

time period and (2) identify the key considerations that appear to drive differences in the relevant analyses. Because the focus of the study is on the effect of the analyses given substantial evidence on impediments to entry, the results may not fully apply to the universe of mergers reviewed.²⁵

Four time periods were defined for the initial analysis. The earliest sub-sample (named after Chairman Steiger) was comprised of the investigations reviewed between the 1993 start of the data set and the April 1995 arrival of Chairman Pitofsky. The second sub-sample tracked the Pitofsky administration from April 1995 through May 2001. The third sub-sample included the Muris administration (starting in June 2001) and extended beyond his term to the late March 2006 issuance of the *Commentaries on the Merger Guidelines* (labeled Muris+). The final sub-sample focused on the additional mergers filed through the end of fiscal 2010. Empirically, the first three sub-samples approximate the data from the earlier paper. While the samples generally link to political administrations, the tested hypotheses are apolitical—a slow movement towards unilateral effects cases starting in 1992 and possibly continuing through 2010, coupled with higher challenge rates for the unilateral concerns. The alternative hypotheses postulate no change in the ratio of collusion to unilateral cases and comparable challenge rates for the two theories.

Table 1 provides information on case count and win rate for the four time periods. In each period, collusion cases make up between 50 and 56 percent of the overall sample, thus no evidence

²⁵ While unilateral analysis is not rejected due to entry considerations, the theories are rejected in favor of collusion analysis based on repositioning arguments (which are likely to be correlated with ease of entry). Hence the collusion sample would be likely to contain more matters in which the standard for entry imposed on the data cannot be met. In particular, 48 matters were deleted for lack of strong entry evidence for the collusion sample, while only 21 were for the unilateral effects sample. Some of these matters were still challenged, if the totality of the evidence tended to raise competitive concerns. (Evidence on ease of entry was not dispositive in all 68 excluded matters.)

TABLE 2 Theories of Concern and Modeling Assumptions by Structure (1993-2010)

	Unilateral	Effects	Coordinated	Effects
Rivals	Homogeneous Goods Markets	Heterogeneous Goods Markets	Homogeneous Goods Markets	Heterogeneous Goods Markets
Three-to-Two	6 (100%)	38 (89%)	14 (100%)	12 (100%)
Four-to-Three	3 (100%)	13 (92%)	14 (93%)	17 (65%)
Five-to-Four	2 (50%)	6 (17%)	9 (33%)	8 (25%)
Six-to-Five +	1 (100%)	10 (20%)	8 (75%)	8 (12%)
Total	12 (92%)	67 (73.1%)	45 (80%)	45(58%)

+ signifies the classification also includes all matters with more the six pre-merger rivals.

exists to suggest that the FTC prefers unilateral theories of violation once the (two-to-one) monopoly cases are deleted from the sample. Win rates show some random variation for the unilateral matters with a range from 69 percent to 88 percent in the most recent interval. Collusion matters show more change, with the win rate increasing from 47 percent to 82. However, the 47 percent win rate turns out to be an anomaly, driven by the inclusion of matters with 9 or 10 rivals in the sample; in later time periods, such cases are closed with a quick look. Thus, for both the case count and the win rate, the samples are compatible over the four time periods.²⁶

Table 2 provides a summary of the case counts, with win rates in parentheses, for the full sample of investigations exhibiting clear evidence on entry impediments. The tabulation compares challenge rates for various rival counts using both competitive theories of concern and two modeling structures for the relevant product (here, either homogeneous or differentiated goods). Theories of unilateral effects are generally applied for differentiated goods, with merger challenges likely in four-to-three and three-to-two market situations, but not likely in the less concentrated markets such as five-to-four transactions.²⁷ This result implies that findings of unilateral con-

²⁶ Unilateral investigations dominate for three to two mergers, with collusion investigations making up between 36 percent and 41 percent of the investigations in each period.

²⁷ For more details on unilateral effects cases, see Malcolm B. Coate, *Benchmarking the Upward Pricing Pressure Model with Federal Trade Commission Evidence*, 7(4) J. of COMPETITION L. & ECON. 825 (2011). Of particular interest is the list of findings that preclude unilateral effects analysis in differentiated products.

cerns are heavily dependent on structure whenever the relevant products appear differentiated. For homogeneous goods markets, the outcome of the unilateral effects investigation appears much less dependent on structure, but the small sample size limits the interpretation of that result.²⁸

Collusion theories are more likely to be applied in homogeneous goods markets, with the challenge rate very high for either three-to-two or four-to-three mergers. Differentiated goods also exhibit a high rate in the three-to-two sample, but a statistically lower (t-statistic 1.96) rate for four-to-three mergers. Combining the rest of the data also shows challenge rates are higher (t-statistic 2.06) when the product market is relatively homogenous. Tabulating the data across the entire sample for the marginally concentrated markets also shows homogeneous goods markets exhibit higher challenge rates: 55 percent for the 20 homogeneous goods cases versus 19 percent for the 32 differentiated goods cases, t-statistic 2.64.

While unilateral concerns are more likely than not in differentiated product markets, collusion theories remain relevant and support a wide range of enforcement when the staff cannot substantiate sufficient head-to-head competition to apply unilateral effects analysis

IV. CONCLUSION

The data suggests that collusion theories continue to represent a viable alternative line of analysis at the Federal Trade Commission. While unilateral concerns are more likely than not in differentiated product markets, collusion theories remain relevant and support a wide range of enforcement when the staff cannot substantiate sufficient head-to-head competition to apply unilateral effects analysis. For homogeneous goods markets, a surprising number of matters are reviewed with unilateral concerns, a result compatible with an implicit application of a Cournot-style model. Challenge rates are clearly affected by market structure, with mergers in homogeneous goods markets more likely to raise concerns than mergers in differentiated goods when five or more pre-merger rivals exist.

It remains to be seen if the 2010 revision of the Merger Guidelines will have a material effect on enforcement at the FTC. A reasonable case can be made that unilateral concerns are clearly the primary choice for a competitive challenge under the new Guidelines, although an equally good case can be made that the courts remain unconvinced and thus the FTC staff might prefer the status quo.²⁹

²⁸ Roughly half of these investigations are related to health care, with most in the two recent periods.

²⁹ See, e.g., *FTC v. Swedish Match* 131 F. Supp 2d 151 (D.D.C. 2000); *U.S. v. Oracle*, 331 F. Supp. 2d 1098 (N. D. Cal. 2004); and *FTC v. CCC Holdings* 605 F. Supp. 2d 26 (D.D.C. 2009).