DEPARTMENT OF JUSTICE

COORDINATED EFFECTS IN MERGER REVIEW: FROM DEAD FRENCHMEN TO BEAUTIFUL MINDS AND MAVERICKS

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I'm delighted to be here today to share with you our current thinking within the Antitrust Division on this important topic. I want to preface my remarks, however, by mentioning that we have just begun a comprehensive review of how we evaluate and prove coordinated effects in merger cases, so what I say today can only reflect my own views, based on my experience both inside and outside the agency, and should not be taken as even my final word on this very important topic, much less the Division's.

Concern over what we now call coordinated effects has long been at the core of U.S. merger policy. As recently as 1986, Judge Richard Posner wrote that the "ultimate issue" in reviewing a merger under the antitrust laws is "whether the challenged acquisition is likely to hurt consumers, as by making it easier for the firms in a market to collude, expressly or tacitly, and thereby force price above or farther above the competitive level."[2]

By contrast, merger law in the European Union (E.U.), consistent with the language of its merger regulation,[3] originally focused instead on whether the transaction would give the merged firm a dominant position in one or more properly defined antitrust markets. Over the last ten years, however, the U.S. and E.U. approaches toward horizontal mergers have converged substantially, with the U.S. agencies and courts paying increasing attention to unilateral effects and the European Commission and courts similarly paying more attention to coordinated effects or, as they call it in Europe, "collective dominance."[4]

This trend has gained momentum since 1998 when the European Court of Justice affirmed the Commission's authority to prohibit mergers on the basis of collective dominance in its *Kali und Salz* decision.[5] The first decision prohibiting a merger on collective dominance grounds was

Gencor/Lonrho, a case involving the proposed merger of two South African platinum producers.[6] Most of the Commission's early collective dominance cases involved what we would view as 3-to-2 mergers, where, post-merger, the two leading firms would have a combined share of 80-90 percent, or more, of the relevant market. More recently, the Commission has extended collective dominance concerns to less concentrated markets, in one instance prohibiting a merger of two UK holiday package tour operators that would have reduced the number of major competitors in the relevant market from 4-to-3.[7] This case, *Airtours*, is now on appeal with a decision expected shortly. In another case, *Time-Warner/EMI*, the Commission is reported to have forced the parties to abandon a merger in the recorded music industry that would have reduced the number of leading firms from five to four, notwithstanding the presence of a substantial competitive fringe holding nearly 20 percent of the market.[8]

In the U.S., some perceive that we have moved somewhat in the opposite direction. Since the issuance of the 1992 Horizontal Merger Guidelines, both the FTC and the Division have placed increased reliance on unilateral effects theories to challenge horizontal mergers and have brought fewer coordinated effects cases. This has caused some to speculate that we have lost confidence in our ability to predict when a merger, other than a 3-to-2 merger, will increase the likelihood of coordination or to win such cases in court. Standing here today, I want to disabuse you all of that view. I can assure you that at the Antitrust Division we remain very concerned about the potential of mergers to facilitate coordination and that we will bring coordinated effects cases where we think that potential is likely to be fulfilled.

I. Some Statistics

Let me begin by sharing some statistics with you. Figure 1 shows U.S. merger investigations and challenges (both DOJ and FTC) as a percent of notifications from FY 1988 through FY 2000. As FTC Commissioner Thomas Leary has previously noted, this chart shows a remarkable consistency in merger challenges as a percent of notifications over this nearly fifteen-year period. It also shows that over the last ten years we have gotten much better at screening out unobjectionable transactions during the initial 30 day waiting period; HSR Second Request investigations as a percentage of notifications have fallen dramatically over the last ten years.

Figure 2 shows the HHI levels at which we brought challenges in FY 2000-2001 as compared to FY 1990-1991.[9] Again, it shows remarkable consistency. We continue to bring a large number of challenges where the post-merger HHIs are in the 2,000-3,000 range, often on coordinated effects theories. Somewhat disturbing is the increasing number of challenges we have to bring at very high HHI levels, right up to mergers to monopoly. This raises a question as to whether the private bar is doing its job in warning clients away from problematic transactions.

Figure 3 compares the market shares at which we challenged mergers in 2000 and 2001 with those in the E.U. This chart shows, contrary to what I suspect is a widespread misperception, that we challenge more mergers with combined market shares of less than 40 percent than the European Commission does. This may explain why the European business community has not been so eager to embrace our substantial lessening of competition standard.

Figure 4 is somewhat hard to reconcile with Figure 3. It shows that over the last five

years the percentage of notifications resulting in challenges has risen quite dramatically in Europe while remaining very constant in the United States. I'm not sure what accounts for this difference in trend line and I would be very interested to hear what Götz Drauz's views are as to the reasons for it.

With this prelude, let me turn to the subject I've been asked to discuss, coordinated effects. I am going to begin by reviewing the tools that both the European Commission and we use to evaluate and prove coordinated effects. I will then talk about some new thinking growing out of our highly successful multinational cartel enforcement program and some of our recent coordinated effects merger cases. Finally, I will take a brief look at the European doctrine of collective dominance to see how close it is to our thinking on coordinated effects.

II. A Review of Basic Oligopoly Theory[10]

A. Dead Frenchmen

The dead Frenchmen to whom I refer in my title are, of course, Cournot and Bertrand, who developed the two basic models of non-cooperative oligopoly pricing. In the Cournot model, firms seek to maximize profit by setting output, taking their rivals' outputs as given. As Figure 5 taken from Carlton and Perloff shows, the predicted outcome is a price between the competitive price and the monopoly price, with the equilibrium price approaching the competitive level the number of firms goes to infinity. Under the Cournot model, therefore, as Figure 6 shows, as there is a direct, but nonlinear, relationship between prices and concentration in a market, assuming all else remains equal.

In the Bertrand model, firms compete on price rather than output, seeking to maximize profit by setting price. Assuming firms produce homogeneous products and are able to supply the entire market demand, the Bertrand model predicts an equilibrium price even in a two-firm duopoly equal to marginal cost if both firms are equally efficient, which we can see returning to Figure 5. If one firm's costs are lower than the other's, the model predicts that the lower cost firm will supply the entire market at a price just below the higher cost firm's costs. Under Bertrand, therefore, there is no relationship between price and the number of firms in the market, so long as there are at least two. This result (which is often called the Bertrand paradox) no longer obtains, however, if the firms produce differentiated products or if the firms are capacity constrained or have increasing marginal costs so that they are not able to supply entire market. This insight, of course, serves as the basis for our approach to unilateral effects in the 1992 Merger Guidelines.

The important point for our purposes is that neither model has anything to do with coordinated effects. Both models assume a static, one-period game, in which there is no possibility of coordination. As Figure 6 shows, absent coordination both models predict prices, even in highly concentrated oligopoly markets, that are well below the profit-maximizing monopoly price. What this means is that firms will always be able to increase their profits if they can successfully coordinate to set output and price where a monopolist would.

B. Beautiful Minds

The beautiful mind to whom my title refers is, just as obviously, John Nash. The proof for which Nash won the Nobel Prize, contained in his 27-page doctoral dissertation written when he was just 20, was that in any n-player game a set of strategies can represent an equilibrium only if, holding the strategies of all other firms constant, no firm can obtain a higher payoff (profit) by choosing a different strategy.[11] This so-called Nash equilibrium became central to our understanding of coordinated interaction among firms in concentrated markets.

Building on Nash, economists showed that oligopoly behavior can be modeled on the standard prisoners' dilemma game, where both players are better off if they cooperate, but each player is still better off if he defects and the other cooperates. In a one-period oligopoly game, while all firms will earn more if they coordinate their pricing and output than if they pursue a non-cooperative Cournot or Bertrand strategy, each player can earn more individually by undercutting the shared monopoly price. That being the case, coordination cannot be a Nash equilibrium strategy in a single-period game. What makes coordination possible, of course, is that firms interact over a period of time, so that a player who is tempted to cheat knows that its gains may be short-lived if the other players detect and punish his defection. One of the most important lessons learned from game theory, therefore, is that coordination can be a Nash equilibrium only in multi-period games where there is repeated interaction between the players so that a player who cheats in one period risks punishment in later periods. And for a threat of punishment to be credible, a punishment strategy must itself represent a Nash equilibrium at the time it is undertaken. Game theorists showed that if the game continues forever, cooperation is always a

Nash equilibrium strategy. They also showed, however, that if the game has a certain endpoint, no matter how far out, a kind of daisy-chain reaction sets in, again making cheating in every period the only Nash equilibrium strategy. Their models showed, however, that once you introduce uncertainty as to the number of periods, coordination can again become the Nash equilibrium strategy.

C. Modern Oligopoly Theory

Although he didn't make it into my title, the true father of modern oligopoly theory is George Stigler, who used these insights from game theory to begin deducing the market conditions that would be conducive to coordinated pricing, for which he, too, won the Nobel Prize. Stigler focused his attention on the critical question of what prevents firms from coordinating, given that it would be profitable to do so. His seminal contribution, in 1964, posited that the major obstacle to coordination is the cost of information and of contracting — that is, the cost of reaching and enforcing a collusive agreement.[12]

Stigler's central critique of the extant theory at the time was that a "satisfactory theory of oligopoly cannot begin with assumptions concerning the way in which each firm views its interdependence with its rivals. If we adhere to the traditional theory of profit-maximizing enterprises, then behavior is no longer something to be assumed but rather something to be deduced."[13] Stigler viewed the Cournot model -- in which firms are assumed to treat their rivals' output choices as fixed -- and the Bertrand model -- in which firms are assumed to treat their rivals' pricing choices as fixed -- as very unsatisfactory theories because they assumed rather than deduced behavior. A question of central interest to industrial organization economists (and of

course, to antitrust agencies) is the relationship between prices (margins, profits, welfare ...) and the number of competitors in a market. Stigler pointed out that the extant models failed to offer a robust answer to this question, which he regarded as a fatal flaw.

To correct this problem, Stigler focused attention on the key question of what prevents firms from coordinating in numerous settings. Stigler "reminded" us of the simple insight that (like most goods) information is not a free good: it takes buyers and sellers real resources to find out information about prices, qualities, demands, etc. The main implication of this is that rational buyers and sellers will, in equilibrium, demand information only up to the point where marginal benefits equal marginal costs. Since MC > 0, MB must > 0, and so market participants will be (rationally) incompletely informed.

The next step in Stigler's innovative approach was to note that conspirators need to be well informed about each others' behavior so that they can police adherence to their price-fixing (market allocation, quota ....) agreement. Stigler then asked what factors tend to exacerbate or mitigate the monitoring problems facing would-be conspirators. Stigler conjectured that when conspirators cannot directly observe each others' prices or outputs, they will study deviations from their expected sales to deduce whether they have been a victim of cheating. Randomness in industry demand and costs will complicate firms' efforts to interpret this information accurately. To predict whether or where cartels might be able to form and survive, Stigler sought to identify specific product, buyer, and seller characteristics that influence the ease of monitoring (via their effect on the state of information in the market). By moving the focus to these predicates, Stigler sought to deduce rather than assume what market equilibria would occur.

These insights, in turn, led to Stigler identifying three critical elements: the ability to reach agreement, to detect cheating, and to punish deviations. Stigler's contribution caused economists to refocus their attention away from market concentration alone and toward other market factors that served to facilitate reaching and enforcing collusive agreements. Stigler himself began this process by identifying several important factors, including buyer size, frequency of purchases, and transparency of price and other terms. Stigler also emphasized that even where products appear homogeneous, customers are not and that transactions may therefore be quite heterogeneous even where the goods or services sold are not.

Another important insight Stigler contributed is that coordination can take many forms and that the cost of contracting may vary widely across them. Of these, price fixing may actually be the most difficult to negotiate and enforce because it requires specifying and monitoring separate prices for every product grade and quality and also requires agreement on changes in price when demand or supply conditions change. Bid rigging, customer allocations, and fixing market shares may be easier to arrange and enforce, but the latter two run a substantial risk of detection by customers or antitrust enforcers.

Stigler's theory of oligopoly has proven to be extremely robust, not least because it is testable empirically. One of the most interesting studies is by Andrew Dick, one of the many stars in our Economic Analysis Group.[14] As you know, the Webb-Pomerene Export Trade Act of 1918 granted antitrust immunity to exporters to form industry cartels for overseas trade. Andrew studied some 111 Webb-Pomerene cartels formed over a 50-year period. Consistent with Stigler's prediction, he found that firms were more likely to form cartels in industries having

potential market power, slow entry, low contracting costs, and a prior history of collusion. He found, however, that the correlation between cartel formation and these conditions was relatively weak and that we should, therefore, be cautious in trying to use them to predict when cartels, and especially price-rising cartels, will form.

D. Mavericks

Andrew's findings tend to confirm that while economic theory can teach us a great deal about the conditions that are necessary for coordination, it has been less successful in identifying what conditions are sufficient for coordination — that is, to predict when coordination will in fact occur. One particular problem is that neither the theoretical nor empirical literature tells us much at all about whether the disappearance of a single firm through merger will increase the likelihood of coordination, other than, perhaps, in the extreme case where a merger reduces the number of firms in a market from three to two.

In the last ten years or so, economists have tried to fill this gap by focusing increasing attention on what they call "mavericks." My good friend Jon Baker has just published a fascinating article on this subject in the most recent issue of the *New York University Law Review*.[15] Jon's article is based in part on work he did in preparing to testify for the Division in our challenge to the Northwest Airlines/Continental alliance, which the parties agreed to abandon shortly after the trial began. Jon argues that in predicting whether a merger will increase the likelihood of coordinated interaction, the enforcement agencies and courts should focus on whether either of the merging firms has played, or is positioned to play, the role of a maverick -- that is, of a firm that declines to follow the industry consensus and thereby constrains effective

coordination. He argues that the loss of a maverick is likely to facilitate coordination, unless another firm is well positioned to assume the role of maverick post-merger. Conversely, loss of a firm that does not behave as a maverick is unlikely to lead to increased coordination. Moreover, a merger may disrupt coordination by creating a new maverick, particularly if it generates substantial efficiencies. In some cases, therefore, maverick status may serve as a shield, rather than a sword. As I discuss below, these lesson have not been lost on the agencies and, as a result, maverick status is becoming a more important factor in the agencies' evaluation of coordinated effects in merger cases.

III. U.S. Enforcement Policy Toward Coordinated Effects

A. Merger Guidelines

Those of you who have studied the Merger Guidelines will recognize that they adopt Stigler's basic analytical framework for evaluating whether a market is likely to be susceptible to coordinated interaction. They posit, as did Stigler, that "Successful coordinated interaction entails reaching terms of coordination that are profitable to the firms involved and an ability to detect and punish deviations . . . ."[16]

The Guidelines attempt to identify conditions that are conducive to reaching agreement and to detecting and punishing deviations from it. The conditions conducive to reaching agreement include product or firm homogeneity, standardization of pricing or product variables, and availability of key information about rival firms and the market generally. The conditions conducive to detecting and punishing deviations include availability of information about specific

transactions or price or output levels, orders that are frequent, regular and small relative to the total size of the market, and relatively stable demand or cost conditions. Other important factors are the characteristics of the buyers and the nature of the procurement process: large buyers who engage in long-term contracting through negotiated procurements in which the terms are not publicly disclosed are generally less vulnerable to coordination than small buyers who make frequent spot purchases at prices that are publicly available.

The Guidelines recognize the importance of mavericks, noting that coordinated interaction can sometimes be effectively constrained by mavericks who "have a greater economic incentive to deviate from the terms of coordination than do most of their rivals."[17] They explain that "in a market where capacity constraints are significant for many competitors, a firm is more likely to be a maverick the greater is its excess or divertable capacity in relation to its sales or its total capacity, and the lower are its direct and opportunity costs of expanding sales in the relevant market."[18] This is a long way of saying that small firms that can expand sales quickly are more likely to be mavericks than are large firms that are capacity constrained. A firm may also be a maverick if it has unusual ability secretly to expand sales, as may be true for a vertically integrated firm in a market where its rivals are not.

While the Guidelines focus on a priori factors that can be used to identify mavericks, Jon Baker suggests that mavericks can also be identified through what he calls revealed preferences and natural experiments. By revealed preferences he means the firm's past conduct and reputation. By natural experiments he means observing what happens to industry prices when one firm's marginal costs rise or fall relative to other firms in the industry. If the firm is a maverick,

market prices should change; if not, they won't.

B. Litigated Cases

Figures 7 and 8 are lists of litigated coordinated effects wins and losses over the last ten years. While the number of litigated cases is small, even a quick review of these cases shows that courts have generally accepted our Merger Guidelines framework for evaluating coordinated effects. Most of the recent litigated cases involved 3-to-2 mergers, but the chart shows that the FTC was successful in blocking one 5-to-4 hospital merger in the Eleventh Circuit in 1991.[19]

The two most interesting cases on this list are *FTC v. H.J. Heinz*[20] and *Union Pacific/ Southern Pacific*,[21] both 3-to-2 mergers, one which the DC Circuit enjoined and the other which the Surface Transportation Board allowed to proceed over our objection. These two decisions highlight the critical role factors other than concentration can play in evaluating coordinated effects.

The *UP/SP* decision of the Surface Transportation Board (STB) involved the proposed merger in 1996 of the Union Pacific and Southern Pacific railroads, two of the three remaining major rail carriers in the western United States. The Justice Department opposed the merger, as did many states and shippers, on the ground that it would reduce the number of rail carriers on major routes from three to two, creating a duopoly that would facilitate coordinated rate increases. The STB rejected these arguments. While accepting that coordination is more likely in two-player markets than in markets with more rivals, the Board identified a number of reasons it believed rail transportation was not susceptible to tacit collusion. These included (i) the

heterogeneity of rail transportation service, (ii) the lack of transparency of rail prices and services, (iii) the extensive use of long-term, individually-negotiated contracts by large shippers, (iv) the significant economies of density and scope which created an incentive for railroads to compete for all profitable volumes rather than to collude, and (v) the relatively high elasticity of demand for rail service due to intermodal competition with barges and trucks. In addition, the Board found that the disappearance of Southern Pacific was not likely to increase the likelihood of coordination because Southern Pacific was a relatively weak, high-cost third bidder, whose presence did not significantly constrain its larger rivals' rates. Finally, the Board found that past 3-to-2 mergers had not led to price increases. In reaching this conclusion, the Board discounted econometric studies offered by the Justice Department and others to show that rates were higher in 2-carrier markets, finding those studies to be methodologically flawed. Finally, the Board found that whatever small risk of coordination existed was outweighed by the substantial efficiencies the merger would produce in the form of what it called "dramatic cost savings." It would be interesting to go back to see who was right and what has happened to freight rates in the Western United States since the merger, now that the initial traffic disruptions caused by the difficulties UP experienced in integrating SP's routes into its system are behind us.

The D.C. Circuit rejected a similar set of arguments, albeit on very different facts, last year in *FTC v. H.J. Heinz.* Applying a strong version of the *Philadelphia National Bank* presumption,[22] the court held that the defendants had the burden of showing that conditions in the market for baby food made it unlikely that the parties would be able successfully coordinate and that, to meet this burden, they would have to have shown that the "structural barriers to

collusion" were "so much greater in the baby food industry than in other industries that they rebut the normal presumption" that coordination is more likely in a market with two players than with three.[23] In finding that the defendants had not met this burden, the court noted that policing and monitoring a collusive agreement would be relatively easy because information on supermarket prices and sales were highly transparent due to the availability of industry-wide scanner data and that there was a history of price leadership in the industry. The court totally disregarded econometric evidence purporting to show that prices were no higher in two player markets than in three player markets, mentioning only that there was anecdotal evidence to the contrary. In addition, the court rejected the argument that the merged Heinz/BeechNut, which would still be only half of Gerber's size, would have an increased incentive to behave as a maverick due to the substantial efficiencies the merger would generate. The court found that the claimed efficiencies were both overstated and not merger-specific.[24]

C. Settled Cases and Abandonments

Figures 8 and 9 list recent nonlitigated merger challenges that the division brought on coordinated effects theories. There are at least three important lessons to be drawn from this table.

First, the Division is still bringing 4-to-3 and even 5-to-4 coordinated effects cases. The recent case best illustrating this is our challenge to the merger of the two leading U.S. aluminum producers, Alcoa and Reynolds, where we required divestitures in the markets for both smelter and chemical grade alumina.[25] We found that the market for smelter grade alumina (SGA) was global and that the merger would reduce the number of firms from 6 to 5, while increasing

Alcoa's share from 29 to 38 percent. We found that the market for chemical grade alumina (CGA) was North America and that the merger would increase the number of producers from 5 to 4, increasing Alcoa's share from 39 to 59 percent. We found both markets to have a number of characteristics conducive to coordination, including product homogeneity, stable, predictable and inelastic demand and supply, transparency of actions by suppliers and customers, and high entry barriers. We also found a history of coordination and price signaling. Finally, we found that Reynolds was a potential maverick because it had more excess capacity than other smaller producers, while Alcoa would be well positioned post-merger to discipline a cartel because it would not only be the largest producer but would also have substantial excess capacity which would enable it credibly to threaten to punish cheating.

Second, as my summary of the Alcoa/Reynolds merger illustrates, our decision to challenge in each case rested heavily on the presence of the plus factors identified in the Merger Guidelines. In virtually every case we challenged, we found a history of prior coordination and the presence of market conditions that facilitated coordination, such as homogeneous products, transparent pricing and stable demand conditions.

Third, as Jon Baker's article suggests, mavericks are playing an increasingly important role, figuring prominently in three of our last four cases. A good recent example is our challenge to the Premdor/Masonite merger last summer.[26] Premdor was one of two leading producers of residential flush doors; Masonite was one of the two leading producers of the major input for residential flush doors, molded doorskins. While the merger was principally vertical, it had a horizontal dimension because Premdor had recently entered the upstream doorskin market,

although at a relatively small scale. We challenged the merger because we felt that, pre-merger, Premdor was in a strong position to behave as a maverick to constrain a coordinated increase in doorskin prices and that Masonite was likewise in a strong position to constrain a coordinated increase in downstream door prices, whereas post-merger a vertically integrated Premdor/ Masonite would be much more likely to coordinate prices with its major rival, which was also vertically integrated.

D. Lessons Learned from Criminal Cartel Prosecutions

For those who may be tempted to argue that coordination is too difficult to occur in real world, I should not have to do more than to point to the large number of multinational cartels we've successfully prosecuted in last seven years to show why such arguments will fall on deaf ears. Beyond that, I think there are at least ten important lessons to be drawn from those cases that should help inform our review of future mergers. While our criminal cartel cases involve express cartels, whether cartels are express or tacit, they have to reach a consensus and deter cheating, so what we learn from them can inform merger analysis, where the concern is as much about tacit collusion as express.

First, cartels can involve a fairly large number of firms. The number of participants in several of the cartels we prosecuted were surprisingly high. Five or six members were not uncommon and occasionally we have uncovered cartels with 10 or more members. This appears to be due in part at least to fringe players in the market feeling they will profit more by going along with the cartel than by trying to take share away from the larger firms by undercutting their prices.

Second, industry concentration matters. As expected, the industries in which we have detected cartels are usually highly concentrated with the largest firms acting as ringleaders and the fringe players following along. In one case, there was evidence that the industry had attempted unsuccessfully to coordinate prices for several years before the cartel finally got off the ground after the industry consolidated down to approximately six players.

Third, cartels often use multiple tools to enforce compliance. Just as Stigler observed, cartels can take many forms, with the choice of form being determined in part at least by balancing the comparative cost of reaching and enforcing the collusive agreement against the risk of detection. Past empirical studies of price-fixing cases found that multiple instruments of coordination are frequently employed.[27] Our multinational cartel cases over the last seven years found that this pattern continues. The vitamin cartel of the 1990s (whose prosecution led to the largest Sherman Act fines in history), for example, included price-fixing, bid-rigging, customer and territorial allocations, and coordinated total sales.

Fourth, the ability of large sophisticated buyers to defeat cartel activity may be overrated. In merger analysis, some assume that large purchasers in the market will provide sufficient discipline to prevent cartels. Our experience shows to the contrary that many successful cartels sell to large, sophisticated buyers. In the lysine cartel, the buyers included Tysons Foods and Con Agra; in citric acid, the buyers included Coca-Cola and Procter & Gamble; and in graphite electrodes, the victims included every major steel producer in the world. What is particularly ironic is that the perpetrators and victims of the citric acid cartel included some of the very same firms that the district court found were unlikely to engage in or be vulnerable to cartel

activity in refusing to enjoin an acquisition by ADM of one of its leading rivals in the high fructose corn syrup market back in 1991.[28]

Fifth, excess capacity in the hands of leading firms can be an effective tool for punishing cheating and thereby enforcing collusive agreements. In lysine, ADM, which had substantial excess capacity, repeatedly threatened to flood the market with lysine if the other producers refused to agree to a volume allocation agreement proposed by ADM. In another case where competitors bought from one another, the cartel member with the extra capacity threatened to not sell to a competitor who was undercutting the cartel.

Sixth, cartels are more durable that sometimes thought. After the ADM plea, the Wall Street Journal stated "If colluders push prices too high, defectors and new entrants will set things right." Our experience has shown that this is not the case. Several of the cartels we prosecuted had been in existence for over ten years, including one (sorbates) that lasted 17 years, from 1979 to 1996.

Seventh, large, publicly traded companies are not immune from the temptation to engage in cartel activity. Our cases have turned up hard-core cartel activity top management at some of the world's largest corporations and most respected corporations including Christies/Sotheby's, ADM, Hoffmann-La Roche, BASF, ABB, and a host of others. We have repeatedly found that even the largest companies have become sloppy about their antitrust compliance programs and that they are not doing all they should to educate managers about the risks at which they put themselves and their companies by engaging in cartel activity.

Eighth, trade associations and industry publications that report detailed market information are important in facilitating cartel activity. Cartel members will often use trade associations as a cover for their cartel meetings. In both lysine and citic acid, the conspirators created a working group within a legitimate trade association. This group's sole purpose was to provide false, but facially legitimate, explanations as to why they were meeting. Similarly, in some of our chemical investigations, a widely read weekly newspaper was used as the way of announcing price increases to other cartel members, which they were to follow. Other investigations have turned up a one-time agreement to incorporate a public index into a formula; so, as a newspaper announces a commodity price index change, the conspirators do not need to communicate again.

Ninth, cartel participants tend to be recidivists. The most notorious example is Hoffmann-La Roche, which continued its participation in the vitamin conspiracy even as it was entering into a plea agreement for its participation in the citric acid cartel.

Tenth, and finally, while product homogeneity and high entry barriers may facilitate cartel behavior, they are not essential to it. While the products in our cartel cases tend to be fungible, there are sometimes exceptions. One case we prosecuted involved bid rigging on school bus bodies. School bus bodies have many options, but the conspirators were able to work out a formula that incorporated the options and trade-in value to determine a price at or below which the designated winning bidder was supposed to bid. Similarly, while most of our cartel cases involve industries in which entry tends to be difficult, there are notable exceptions, such as in the

Division's many bid-rigging cases in the road building industry. The road building industry, at least at the time of the conspiracies, was not difficult to enter, yet the Division turned up numerous cartels.

IV. Collective Dominance vs. Coordinated Effects: Are They The Same?

Crossing the Atlantic, the approach to coordinated effects or, as they like to call it, collective dominance, appears to be very similar in Brussels to the approach we take here. A consulting firm by the name of Europe Economics published an excellent detailed comparative study of the U.S. and E.U. criteria for analyzing coordinated effects in merger cases in May 2001.[29] I would commend this study to any of you who want to learn more about the EU approach to collective dominance. Figure 10 shows the basic analytical framework that the study found the European Commission uses for determining whether a proposed merger is likely to create or strengthen a position of collective dominance. Figure 11 is a list of the factors the study found the Commission examines to determine whether an industry is likely to be susceptible to collective dominance.

These two figures show that both the Commission's basic analytical framework and the factors it considers in determining whether a market is conducive to coordinated interaction are very similar to our's. What matters, of course, is how those factors are applied in practice. As I mentioned at the outset, the first case in which the Comm'n applied collective dominance to prohibit a merger was *Gencor/Lonhro*, which involved the proposed merger of two South African platinum producers, both of whom had substantial sales into Europe. The merger would have

reduced the number of major platinum producers from three to two, with the two firms having a 90% percent market share worldwide. The Commission found a number of factors conducive to coordination to be present. These include (i) high barriers to entry, (ii) highly homogeneous products, (iii) fairly stable demand, (iv) relatively homogeneous firms, (v) highly transparent pricing, (vi) low price elasticity, (vii) multi-market contacts providing added opportunities to punish cheating, and (viii) a history of coordination in the past. While the market was characterized by a few large buyers, the Commission found that these buyers would be able to pass on price increases to their customers and would therefore lack an incentive to discipline a supplier cartel. As applied in this case, the Commission's approach seems very similar to our's.

In the *Airtours* case, the Commission extended this analysis to prohibit a 4-to-3 merger of packaged holiday tour providers in the U.K.. That case is now on appeal and should be decided shortly, so I will not comment on it, other than to note that the Commission's application of collective dominance doctrine in that case has been a matter of considerable controversy in Europe. What this controversy illustrates is that however sound the analytical framework, what really matters is how that framework is applied in practice. Merger cases, like all antitrust cases, are highly fact-specific and it is critical in evaluating whether a merger is likely to facilitate coordinated interaction that we base our decisions on careful economic analysis and a thorough investigation of the evidence.

I have not attempted to undertake a thorough review of EU collective dominance decisions to determine whether they meet this test, nor would it be possible to do so without having much more insight into the facts of each case than one can glean from the written decisions

themselves. As I indicated at the outset, I believe the most important differences that remain between us in this area relate not to the analytical frameworks we use, but to process issues. Predicting whether a merger is likely to facilitate coordination requires very difficult judgment calls, as evidenced by the fact that a D.C. Circuit panel unanimously reversed a very good district judge in the Baby Food merger, on which the FTC itself split 3-to-2. This is why it is critical that we have in place strong checks and balances, including effective and timely judicial review.

These cases also raise very difficult economic issues. We have found that econometric evidence can be just as useful in evaluating coordinated effects theories as in unilateral effects cases. This is why we maintain a large staff of 50 very talented Ph.D.-trained Industrial Organization economists and econometricians headed by an academic superstar like Mike Katz. I know the EU is considering expanding its economics section and will be eager to hear what Götz Drauz can tell us about the status of those efforts.

Finally, I should say a word about the role of efficiencies in evaluating coordinated effects. As I mentioned earlier, in the U.S. we view efficiencies as critical to determining whether a merger will facilitate coordination or, as may just as often be the case, disrupt ongoing coordination. I have never seen any discussion of how, if at all, the Commission factors efficiencies into its evaluation of mergers that are alleged to give rise to a position of collective dominance. I'm hoping Götz Drauz and Jan McDavid will address this subject in their remarks.

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Woodward, Larry Frankel, John Donaldson, Deborah Roy, Maurice Stucke, Jonathan Baker, Kenneth Heyer, John Mitnick, Bente Birkeland, Christina Akers, and Gloria Jenkins.

2. Hospital Corp. Of America v. FTC, 807 F.2d 1381, 1386 (7th Cir. 1986). *See also* FTC v. H.J. Heinz, 246 F.3d 708 (D.C. Cir. 2001)("Merger law 'rests upon the theory that, where rivals are few, firms will be able to coordinate their behavior, either by overt collusion or implicit understanding, in order to restrict output and achieve profits above a competitive level.")(*quoting* FTC v. PPG Indus., 798 F.2d 1500, 1503 (D.C. Cir. 1986.)

3. Guide to EC Merger Regulation, published by Wilmer, Cutler & Pickering 2 (3rd ed. 2001).

4. James S. Venit & William J. Kolasky, *Substantive Convergence and Procedural Dissonance in Merger Review,* in Antitrust Goes Global: What Future for Transatlantic Cooperation? 81 (Simon J. Evenett, et al, ed., 2000).

5. Kali+Salz/MdK/Treuhand, Case No. IV/M.308, Commission decision of July 9, 1998.

6. Gencor/Lonrho, Case No. IV/M.619, Commission decision of April 24, 1996.

7. Airtours/First Choice, Case No. IV/M.1524, Commission decision of September 22, 1999.

8. Phillip Shishkin & Branden Mitchener, *Europe Panel Likely to Block Music Merger*, Wall St. J., October 5, 2000, at A3.

9. The data on which Figures 2 and 3 are based are still preliminary and may be incomplete or inaccurate. We are continuing to work on refining the data and will provide updated figures with any revisions that may be necessary once that work is completed.

10. This discussion is based principally on Dennis W. Carlton and Jeffrey M. Perloff, Modern Industrial Organization (1994); Jean Tirole, The Theory of Industrial Organization (1998); and Europe Economics, Study on Assessment Criteria for Distinguishing between Competitive and Dominant Oligopolies in Merger Control: Final Report for the European Commission Enterprise Directorate General (2001).

11. *See* Sylvai Nasar, A Beautiful Mind: A Biography of John Forbes Nash, Jr., Winner of the Nobel Prize in Economics in 1994 (1999).

12. George J. Stigler, *A Theory of Oligopoly*, 44-61 Journal of Political Economy 72 (1964).

13. *Id.*

14. *See* Andrew R. Dick, *Are Export Cartels Efficiency-Enhancing or Monopoly-Promoting?*, 15 Research in Law and Economics, 89-127 (1992). *See also* Andrew R. Dick, *Identifying Contracts, Combinations and Conspiracies in Restraint of Trade*, 17 Managerial and Decision Economics, 203-16 (1996).

15. Jonathan B. Baker, Mavericks, Mergers and Exclusion: Proving Coordinated Competitive Effects Under the Antitrust Laws, 77 N.Y.U.L. Rev. 135 (2002).

16. *See* U.S. Dept. Of Justice & Federal Trade Comm'n. Horizontal Merger Guidelines 4.0 (1997), reprinted in 4 Trade Reg. Rep (CCH), sec. 2.1.

17. *Id. at sec. 2.12*

18. *Id.*

19. *See* F.T.C. v. University Health, 938 F.2d 1206, 1222 (11th Cir. 1991)

20. *See* F.T.C. v. H.J. Heinz, 246 F.3d 708 (D.C. Cir 2001).

21. *See* Union Pacific Co/Southern Pacific Transportation Co. 1996 WL 467636 (S.T.B 1996)

22. *See* U.S. v. Philadelphia Nat'l Bank, 324 U.S. 321 (1963).

23. *See* F.T.C. v. H.J. Heinz, 246 F.3d 708 (D.C. Cir. 2001).

24. Prior to joining the Division, I wrote an article questioning the Court of Appeals' decision, arguing that the court had been overly skeptical and too dismissive of the claimed efficiencies. *See* William J. Kolasky, *Lessons From Babyfood: The Role of Efficiencies in Merger Review*, Antitrust, 82-87 (Fall 2001).

25. *See* U.S. v. Alcoa, Inc. & Reynolds Metals Co., No. 1:00CV00954 (D.D.C. 2000).

26. *See* U.S. v. Premdor, Inc., No. 1:01CV01696 (D.D.C. 2001).

27. Fraas and Greer (1977) studied 606 Department of Justice price-fixing cases and found that bid-rigging was present in 113 cases and allocation of markets in 158 cases. Arthur G. Fraas and Douglas F. Greer, *Market Structure and Price Collusion: An Empirical Analysis*, The Journal of Industrial Economics, 26, 21-44 (September 1977). Posner (1970) examined 989 horizontal conspiracies from 1890 to 1969 and found bid-rigging was present in 139 cases, product, customer, or territorial allocations in 239 cases, information exchange in 61 cases, exclusive sales agency or pool in 55 cases, and collusion on terms besides the basic price in 139 cases. Of the number of Posner's total of 989 horizontal conspiracies, most, but not all, involved price-fixing as well as the practices listed. *See* Richard A. Posner, Antitrust Law, An Economic Perspective (1976). Gallo, et. al (2000) studied 688 horizontal per-se violations cases from 1955 to 1997 and found that the number of violations (price-fixing, bid-rigging, customer allocation, and so forth) per case increased from about 2 before 1980 to 12 between 1990 and 1994. Some prominent examples of prosecuted collusion involved firms adopting several coordination tactics in concert. The electrical equipment conspiracy of the 1950s and 1960s included coordination on list prices, bid-rigging, market shares, and customer allocation. Joseph C. Gallo, Joseph L. Craycraft, Kenneth Dau-Schmidt, & Charles J. Parker, *Department of Justice Antitrust Enforcement, 1955-*

1997: An Empirical Study, 17 Review of Industrial Organization 75-133.)

28. U.S. v. Archer-Daniels-Midland Co., 781 F.Supp. 1400. (S.D. Iowa, 1991).

29. *See* European Economics, Final Report for the European Commission Enterprise Directorate General, Study on Assessment Criteria for Distinguishing Between Competitive Oligopolies in Merger Control,(2001).