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Robert Petersen considers the importance of proper valuation of employee stock options. He notes that standard models can overstate or understate employee stock option values because they do not adjust for fundamental differences between these options and publicly traded options. A modified valuation approach can yield upper- and lower-bound estimates that are more accurate than those produced by standard models.

Economic Incentives in a Hospital Privileges Context

Barry C. Harris and David A. Argue analyze the economic incentives of hospitals and physicians in *Angelico v. Lehigh Valley Hospital, et al.* They explain why hospitals do not have an incentive to facilitate physicians gaining market power. Also, the patient origin data showed that the defendant hospitals had divergent incentives regarding cooperation. In addition, each defendant hospital would benefit by having an efficient surgeon on its staff.

Economic Analysis in Class Certification

William C. Myslinski discusses the role of economic analysis of large, complex transactions data sets in the class certification process. It is becoming more apparent that such analysis can contribute to the court's understanding of the issues and influence the class certification outcome. He states that a proper cost-benefit comparison for such economic analysis should not be restricted to the certification stage, but should be made in the context of the entire case.

Valuing Employee Stock Options

By Robert Petersen

Stock options have become a popular form of employee compensation, especially among start-up firms in industries such as pharmaceuticals and high tech. They are popular because of the favorable tax treatment they receive, but also because employee stock options are a way for small, start-up firms to attract and retain the talent necessary to compete with larger, more established rivals. Lately, employee stock options have played a prominent role in litigation matters, and their proper valuation has become an important consideration.

Stock options are complicated investment instruments whose valuation requires a formal statistical model. The most popular option-pricing models, such as the Black-Scholes model or the binomial model, provide highly accurate estimates of the value of a stock option. Standard option-pricing models, however, were designed for use with short-term, fungible investment instruments that typically are traded on public exchanges. Standard option-pricing models may not, without modification, be appropriate for valuing employee stock options. In particular, research has shown that standard option-pricing models can dramatically overstate the value of employee stock options and, as a consequence, dramatically overstate damages estimates.

The right valuation model for an employee stock option is one that adjusts for the options' unusual nature. Whereas publicly traded stock options tend to have relatively short terms (e.g., 6-12 months), can be exercised immediately, and can be bought and sold freely, employee stock options are very different. Employee stock options typically have 5-10 year terms and can be exercised only after a lengthy vesting period. More significantly, employee stock options are not transferable.

The nontransferability of employee stock options is an important restriction. Standard option-pricing models are based on the assumption that stock options will be exercised at or near the optimal exercise time. When options are easily transferable, the transferability feature ensures that an option will not be exercised prematurely. For example, if the holder of an option does not wish to retain possession of the option until the appropriate exercise time, the option can be sold to another investor. That investor will then retain possession of the option until the optimal time, or sell the option to yet another investor. In this way, the option may change hands several times but will never be exercised prematurely. On the other hand, if, because of risk aversion or a desire to diversify his or her investment portfolio, the holder of an employee stock option wishes to divest, his or her only choice is to exercise the option. This may mean exercising the option before the optimal exercise time and receiving less than optimal value.

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Analyzing Economic Incentives in a Hospital Privileges Context

By Barry C. Harris and David A. Argue

After a six-week trial, a federal jury decided that three hospitals in the Lehigh Valley area of Pennsylvania did not conspire to exclude Dr. Richard Angelico from the market for the services provided by cardiac surgeons. Dr. Angelico alleged that he had suffered $19 million in damages resulting from violations of the Sherman Act by the defendant hospitals and surgeons, including a group boycott, a concerted refusal to deal, exclusive dealing, monopolization, and conspiracy to monopolize. As in most antitrust cases, *Angelico v. Lehigh Valley Hospital, et al.* included analyses of product market, geographic market, and the impact on price. An additional important part of the economic analysis in *Angelico* concerned the defendants' incentives to engage in the alleged actions.

Dr. Angelico alleged two related conspiracies. One was vertical, involving the defendant surgeons and the defendant hospitals. The other was horizontal, among Lehigh Valley Hospital, St. Luke's Hospital and Easton Hospital, the defendant hospitals. The claimed overall goal of these alleged conspiracies was to eliminate Dr. Angelico from the market so that the defendants could take over his large surgical practice. The defendants maintained that if there were any harm to competition from the exit of Dr. Angelico, it would affect the market for professional cardiac surgical services, not hospital surgical services. Contrary to plaintiff's claims, the defendant hospitals had no incentive to create or enhance market power in professional surgical services.

The reason why the defendant hospitals had no incentive to endow cardiac surgeons with market power stems from the complementary relationship between physician and hospital services. The services offered by cardiac surgeons are combined with those offered by hospitals to create what economists refer to as complements. An increase in the market price charged by cardiac surgeons would force the hospitals either to lower their price or to suffer a reduction in patient volume. This relationship between price and consumption of complements was important in *Angelico* because plaintiff's theory indicated that the exclusion of Dr. Angelico was made possible by the alleged joint market power of the defendant hospitals. In fact, the hospitals would be harmed if they bestowed market power on the defendant cardiac surgeons.

The alleged conspiracy was also economically implausible because it required coordinated interaction by the defendant hospitals. In *Angelico*, standard market-definition analysis, including the identification of the Critical Loss, revealed practical evidence that a successful conspiracy among the defendant hospitals was unlikely. Patient migration data showed that Lehigh Valley Hospital was significantly more exposed to competition from non-defendant hospitals than was either St. Luke's Hospital or Easton Hospital. Lehigh Valley Hospital's service area was much larger than the other defendant hospitals' service areas. As a result, it extended closer to non-defendant hospitals. As expected, a larger portion of Lehigh Valley Hospital's patients resided in zip codes in which a significant share of patients already used alternative hospitals. Therefore, Lehigh Valley Hospital's loss of patients in the event of a greater-than-competitive price increase would more readily exceed the Critical Loss than would be the case for the other defendant hospitals. Lehigh Valley Hospital would not be expected to participate in a conspiracy in which it would bear a disproportionate share of the lost revenue.

The plausibility of the alleged conspiracy among the defendant hospitals was further undermined by other aspects of plaintiff's allegations. Dr. Angelico claimed that because of his superior surgical skills, patients were discharged from the hospital more quickly after he performed surgery than after the defendant physicians performed surgery. If the claim were true, then each hospital would have an individual incentive to want Dr. Angelico on its staff. Because Medicare and many managed care plans pay hospitals on a fixed, per-case basis, hospitals benefit by discharging patients as quickly as possible. Thus each of the defendant hospitals would gain financially if its surgeons were able to reduce the amount of time spent and resources consumed by patients in the hospital.

While the facts were specific to the *Angelico* case, the need to consider incentives is often present in antitrust cases involving allegation of boycotts, refusals to deal, exclusive dealing or foreclosure. Often the parties with the power to implement the claimed action have little or no incentive to do so. In *Angelico*, the defendant hospitals had the power to deny the plaintiff privileges. From a competitive perspective, however, such actions were inconsistent with their economic incentives.

Principal Barry C. Harris and Senior Vice President David A. Argue are experienced in healthcare antitrust matters. Both worked on behalf of the defendants in Angelico *and Harris testified before the jury.*

Economic Analysis in Class Certification

By William C. Myslinski

In the realm of class action price-fixing litigation, economic analysis of large, complex data sets of transactions has acquired increasing importance. Historically, economic analysis has seldom been used at the class certification stage. That pattern has changed, however, as sophisticated economic analyses have been shown to contribute to the court's understanding of the issues and, in several cases, have affected the class certification outcome.

Recently, in *The Milk Products Antitrust Litigation (Minnesota)*, the defendants' analyses of geographic market issues and pricing data caused plaintiffs to narrow significantly both the geographic and product scope of their class definition even before the court ruled on class certification. In addition, after the class definition was narrowed, analysis of pricing and transaction data indicated that common proof of class-wide impact was not plausible. Indeed, the data presented by defendants in opposition to class certification cast serious doubt on the merits of plaintiffs' liability case. The court ultimately denied the plaintiffs leave to file a fourth amended complaint and denied class certification because of inadequate class representation. While economic grounds were not formally cited as a reason for the end of this case, one strongly suspects that the court's sympathy for the plaintiffs had been significantly eroded by the economic analysis.

In another class certification matter, *Butt v. Allegheny Pepsi-Cola Bottling and Mid-Atlantic Coca-Cola Bottling*, the court cited defendants' analysis of 1.1 million transactions as part of its reasoning for denying certification. The court found that "the transactions were highly individualized...[and] that not all transactions were influenced by the alleged conspiracy." Economic analysis showed that prices varied by day and by customer, and some similar customers paid different prices for the same products on the same day.

In *MacDunnah's Inc. d/b/a The Fiddlehead Restaurant and the State of Alaska v. Amerigas Propane, Inc.*, plaintiffs used pricing data in an attempt to demonstrate class-wide impact and to measure damages. Defendants relied on the same data to point out that the plaintiffs could not demonstrate that all class members had been adversely impacted. Some members of the proposed class experienced a decline in prices, not an increase in prices as the plaintiffs' theory alleged. This case ultimately settled before class certification.

> "Sophisticated economic analyses have been shown to contribute to the court's understanding of the issues and have affected the class certification outcome."

These examples illustrate some of the reasons why economic analysis can be an integral part of a class certification strategy. Among the most important reasons is that the data, when properly considered, may reveal whether the proposed classes meet the statutory requirements for being certified. This showing counteracts traditional beliefs that plaintiffs tend to prevail at the class certification stage. Such beliefs have made defendants reluctant to engage in the analysis of transactions data and have given plaintiffs little need to do so.

Economic analysis of the transactions data also can help to educate the court about the nature of the issues likely to come before it in the liability phases of the case. One of the conventional justifications for foregoing economic analysis is the belief that such analyses pertain only to liability issues and thus have no place in a class certification hearing.

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Selected EI Cases

Casino Industry Acquisition

Principal William P. Hall submitted an expert report and testified on behalf of Park Place Entertainment Corporation before the New Jersey Casino Control Commission regarding Park Place's proposed acquisition of the Claridge Casino and Hotel. The testimony considered the potential for creating undue economic concentration in the gaming industry in Atlantic City. The Commission ruled in favor of Park Place, and concluded that the market is vigorously competitive and that the effect of the Park Place proposal on Claridge and the market can only be positive. Park Place was represented by Latham & Watkins and Sills Cummis Radin Tischman Epstein & Gross.

Natural Gas Industry Acquisition

Principal Philip B. Nelson and Vice President John R. Morris worked with Fried, Frank, Harris, Shriver & Jacobson and Skadden, Arps, Slate, Meagher & Flom to obtain regulatory approval of El Paso Corporation's merger with The Coastal Corporation. The merger was reviewed by the Federal Trade Commission and Federal Energy Regulatory Commission as well as by the Canadian Competition Bureau and various state antitrust enforcement agencies. Previously, Nelson worked with Fried, Frank and Andrews & Kurth to obtain approval of El Paso's acquisition of Pacific Gas & Electric's natural gas assets in Texas.

Stock Options . . . (Continued from Page 1)

The tendency towards early exercise of employee stock options is so significant that special option-pricing models have been developed specifically for use with employee stock options. Employee stock option-pricing models include the usual data, such as the expected growth in stock price, but also include data specific to the employee, such as an employee's risk aversion and the size of his or her non-option wealth. These employee-specific variables provide information about how likely an employee is to exercise a stock option prematurely. Unfortunately, while employee option-pricing models are theoretically superior for use with employee stock options, they are difficult to use in practice because the models are very complicated and some of the required data are not readily available. As a result, one must often construct "upper" and "lower" valuations that bracket the true valuation.

Estimation of an upper bound may, for example, begin with a standard valuation model, such as the Black-Scholes model, and involve replacing the maturity date of the option with an estimate of when the employee is likely to exercise the option. This one change will produce a valuation that reflects the lower value the employee may receive due to early exercise of the option. The valuation produced by such a "modified" Black-Scholes model will be more accurate than a standard Black-Scholes model yet will still tend to overstate the option's true value. So, for example, changing the term of an option from the stated expiration date of ten years to the expected exercise date of seven years will produce a valuation that is higher than the value of the ten-year option after seven years. Nevertheless, a modified Black-Scholes model can be used to create an upper valuation of the employee stock option.

For a lower valuation, the so-called "minimum value" model can be used. The minimum value model yields an estimate of option value based on conservative assumptions regarding growth in stock price and stock price volatility. The valuation produced by the minimum value model produces an accurate estimate in some cases but tends to understate the true value in others. For this reason, the minimum value model is a good candidate for producing a lower valuation.

The increased use of stock option compensation has led to increased scrutiny of standard option-pricing models as a means of valuing employee stock options. Standard option-pricing models have been shown to overvalue employee stock options. Revisions to standard option-pricing models enable the calculation of upper- and lower-bound estimates that are more accurate and avoid the overestimate produced by standard option-pricing models.

Vice President Robert Petersen has recently joined EI, specializing in employment discrimination, commercial damages and intellectual property matters. He has testified numerous times in employment discrimination cases, including cases involving employee stock options.

Class Certification . . . (Continued from Page 3)

Even in cases in which the analysis does not have a direct bearing on the outcome of the class certification process, however, it can be a valuable part of the litigation process.

Of course, cost considerations are important in the decision of whether to perform economic analyses of the data. The data sets involved in class action litigation tend to be large and complex and may contain millions of sales records. Analysis of complex data sets for class certification purposes can be costly, in large part because of the time required for the up-front process of cleaning, preparing and understanding the data bases prior to analysis. These problems are inherent in handling data for litigation purposes and they are roughly proportional to the size and number of the data bases. If, however, the relevant transaction data will have to be analyzed for summary judgement purposes or for the liability phase of the litigation, the benefit of making it available for data-rich arguments at the class certification stage make it worthwhile to analyze the data at the earlier stage.

It is clear that economic analysis of the data in considering the merits of class action litigation can be vital. It is becoming increasingly apparent that economic analysis at the class certification stage has value in its own right.

Principal William C. Myslinski has testified in several class certification matters including The Milk Products Antitrust Litigation (Minnesota). *EI also provided economic analysis for Mid-Atlantic Coca-Cola Bottling in the* Butt *case and for Amerigas in the* MacDunnah's *case.*

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