board’s composition addresses the company’s current and future business needs. This will help to shape the content of any discussions with shareholders concerned about the composition of the board.

• **Review Governance Documents**—Although proxy access will not be in place for the 2011 Spring proxy season, shareholder meetings are becoming more contentious and the threat of proxy contests remains. Thus, companies should review their bylaws, shareholder meeting procedures, corporate governance guidelines, committee charters and other board policies to see that they are up to date, address areas of shareholder concern, and reflect best governance practices appropriate for each company.

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**The Power of Screens to Trigger Investigations**

*BY ROSA M. ABRANTES-METZ*

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Screens based on data can be important tools to detect conspiracies of various types and have started to be used by Competition Authorities worldwide to actively detect such behavior. Screens can also be used during prosecution and penalization stages.

A screen is a statistical test designed to identify industries where competition problems exist and to further identify which firms and individuals are involved in a conspiracy or manipulation. Screens apply statistical tools to commonly available data, such as goods prices, contract bids, costs, market shares, revenues, stock, and commodities prices, among others, to identify patterns which are either highly improbable or anomalous.

Broadly speaking there are two types of screens. The first type of screen searches for improbable events, much like a casino screens for cheats. For example, what is the likelihood that a particular player wins five times in a row? It is very, very low. If such an event occurs, while it does not prove that cheating occurred, it is so unlikely that it raises a red flag and invites further investigation. One set of collusive screens generalizes this idea by looking for events that are highly improbable unless firms in the industry have explicitly coordinated their actions.

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The second type of screen uses the concept of a control group to identify anomalous patterns in the data. In the 1980s, organized crime in New York City operated a “concrete club” that rigged bids on contracts of more than $2 million. During this period, the price of concrete was 70% higher in New York City than other U.S. cities. Prices in other cities where collusion was suspected could serve as a control group for evaluating prices in New York. While it is true that prices of many goods and services are higher in New York City, few prices are 70% higher than in other large cities. Prices (or some other metric) which appear anomalous suggest a competition problem and, again, invite further investigation.

Screens have been developed and implemented to search for a wide variety of competition problems, including bid rigging, price fixing, stock and commodities prices manipulations, revenues
management, market allocation schemes, and stock options backdating. There are four desirable properties of a good screen: (i) it should minimize the number of false positives and negatives; (ii) it should be easy to implement; (iii) it should be costly for agents to disguise such behavior; and (iv) the screen should have empirical support.

Screens can be very important tools in initiating and developing a case, but we should emphasize that screens do not prove wrongdoing. Screens merely isolate outcomes that are improbable or anomalous and less likely to occur under competitive settings, and thus merit closer scrutiny. Screens will exhibit both false positives and false negatives. However, this does not mean that screens lack value. Doctors regularly screen their patients for diseases even though their methods exhibit both false positives and negatives. Even so, they screen patients, because the expense of testing all patients for a rare disease is prohibitive. For a doctor, the process of screening identifies a subset of patients that are at a higher risk than others, which then allows the doctor to engage in the more extensive testing for just a selective few. Analogously, a good screen in our context will narrow the set of possible conspiracies to a manageable few, which might merit further review.

Screens are not only useful to competition agencies; they can also be a powerful tool for plaintiffs and defendants in antitrust and securities cases. Their multiple uses include (i) establishing the likelihood (high or low) of a conspiracy or manipulation, or assessing its materiality; (ii) assisting with decisions on whether to apply for leniency; (iii) at the class certification stage; (iv) for internal monitoring for firms; (v) estimating damages; and (ii) for motions to dismiss.

**Screens are not only useful to competition agencies; they can also be a powerful tool for plaintiffs and defendants in antitrust and securities cases.**

Economic analysis and empirical screening have triggered several antitrust cases including an Italian cartel in baby milk and a Dutch cartel in the shrimp industry. Screens are also used to identify potential anti-competitive behavior in gasoline markets by the Federal Trade Commission, and to prioritize complaints in the Brazilian gasoline retail market. Other agencies employing these techniques include the Commodity Futures Trading Commission, where screens for price manipulation in commodities markets are used to detect and prevent such behavior in all active futures and option contracts.

In this article we focus on detection in financial markets, by discussing two examples of investigations triggered by the use of empirical screens: stock options backdating and odd-eights avoidance by NASDAQ dealers. We then present the results from screens applied to a potential Libor rate conspiracy and manipulation and question whether such findings would suffice to trigger an investigation into the matter.

### Triggering Stock Options Backdating and Springloading Cases

Interesting case studies on the power of screens to trigger litigation can be found in the stock options backdating and springloading cases of the mid and late 2000s. Several dozen cases were put forward at this time, many of which were initiated by an empirical screen.

The backdating of employee stock options refers to the grant of the options effective at a date actually prior to the date they are physically given. Allegations in these cases claim that the stock price on the backdated grant date is lower. Others also allege that the options strike price is set equal to the stock price on the backdated date of the options. Many of these cases also involved allegations of stock options springloading, referring to a practice in which options are granted ahead of positive news or to the withholding of positive news until after the options are granted.

In a 2005 paper by University of Iowa finance professor Erik Lie, a screen for stock options backdating was developed which quickly gained in popularity. The author noticed that several studies had documented that stock excess returns
tended to be negative before executive option grants and positive after such grants. On August 29, 2002, the Securities and Exchange Commission (SEC) implemented the requirement that stock options grants be reported within two business days. In this study the author found that such pattern in stock excess returns had been broken since the SEC requirement took effect. The author also found that for the cases in which stock options grants were reported within one day of the grant date, the pattern had completely disappeared, though it continued to exist for grants reported with longer lags, with the magnitude of the effect typically increasing with the reporting delay. Lie interpreted the results as evidence that most of the excess returns pattern around option grants was attributable to backdating of stock options grant dates.

Such breaks in typical patterns of excess returns observed at the aggregate level called for screening for excess returns of individual companies. An article titled “The Perfect Payday” published by the Wall Street Journal on March 18, 2006, screened for such behavior in excess returns and red flagged seven companies as candidates for stock options backdating and springloading.

The screening of such patterns did not restrict itself to the Wall Street Journal. For example, at that time a case was brought against Countrywide Financial Corp. (Countrywide) by the Louisiana Municipal Police Employees’ Retirement System (LAMPERS). Countrywide is one of America’s leading home loan lenders and LAMPERS is a pension fund which at the time had more than $1 billion under management, responsible for managing and investing funds of current and retired employees of the Louisiana Police Force. LAMPERS had purchased Countrywide shares on May 15, 1998, and had since remained a shareholder of the company.

Plaintiffs applied the described screen for stock options backdating and springloading and claimed particular days as red flags for potential illegal behavior. The complaint also based its allegations on an article published by the Los Angeles Times on June 7, 2006, titled “Good News Link to Options Suggested.” The article reported on findings made by a shareholder advocacy firm, Corporate Library, which had reviewed the option-granting practices of a number of public companies. The LA Times article specifically noted that Countrywide had a “knack” of granting stock options to executives shortly before it released favorable news to the market. The existence of this pattern suggested that Countrywide’s executives had been taking advantage of inside information to ensure they profited from option grants.”

In its prayer for relief, LAMPERS requested immediate access to some of Countrywide’s internal documents in order to “permit the inspection and copying of each and every book and record” previously requested.

A hearing was held on April 18, 2007, and experts on both sides explained their views on the matter. Among other detailed analyses on particular days, the expert for LAMPERS presented a refinement of the screen for backdating and springloading based on Lie’s paper. On the other side, the expert for Countrywide explained the reasons why such a screen could lead to erroneous results, and put forth his own analyses based on various other screens, using only publicly available data as well.

The defendant’s expert first argued that the plaintiff’s expert “cherry-picked” the dates. LAMPERS had provided an initial set of dates which changed over time implying changes in results. Ultimately, LAMPERS settled on a dataset which included 11 option grants. Out of the 19 option grants issued by Countrywide between 1997 and 2005, six of these exhibited negative returns. In its final permutation of the alleged relevant dates in which grants were backdated, LAMPERS’ expert eliminated any of the days that had negative returns, keeping only positive return days.

Several other analyses were also presented by the defendant’s expert. A major such analysis was to compare the returns of the four “on-schedule grants” (which by definition could not have been manipulated), with the seven “off-schedule grants,” the candidates for backdating, taking as given the dataset selected by LAMPERS’ expert. The screen applied in this context was to say that if only the off-schedule grants could be backdated, if this were to be a profitable strategy then the mean returns for this group should be larger.
than the mean returns for the group of on-schedule grants. The defendant’s expert found that this was not the case, casting doubt on the backdating hypothesis.

On both sides, the case was based on a battle of arguments on why or why not the initial screen was reliable, and which other screens should also be applied to red flag these situations. In the end, the screen put forward by LAMPERS’ expert was powerful enough to survive a motion to dismiss. The Court’s decision was in fact very clear on this point, stating that:

The Court is left with a number of plausible inferences based on the testimony and evidence presented in this case and no conclusive answers. Perhaps there is more to LAMPER’s statistical correlation than meets the eye. Perhaps there is less. Such is the nature of statistics.

The evidence in this case presents a close call. The Court is far from convinced on the basis of this record that any wrongdoing actually occurred at Countrywide with respect to the granting of executive stock options. More importantly for the purposes of this proceeding, however, the Court is not convinced, in light of all the evidence, that the analysis and methodology employed by LAMPERS’ expert are so dubious that they have not at least raised a possible issue of corporate misconduct that warrants further inquiry. LAMPERS has made an adequate showing of a “credible basis” from which the Court can infer possible corporate misconduct that would justify imposing upon Countrywide the burden of complying with an order issued under Section 220, and therefore, LAMPERS will have limited access to Countrywide’s books and records as described herein and for the purpose of investigating its concerns.

We should note that had the standard been plausibility rather than possibility the plaintiff’s screen might not have survived such a motion to dismiss, in which defendant’s screens would have been empowered.

Triggering a DOJ’s Investigation on an Alleged Conspiracy among NASDAQ Dealers

Stock options backdating cases were not the only ones initiated through the use of screens. Screens have been shown to be powerful for other cases as well. A classic example of a major case in the United States initiated due to a screen is that of the alleged conspiracy in the NASDAQ inside spreads which broke on May 1994.

In most financial markets, changes in prices have a lower bound, the tick size. For all stocks traded at $1.00 or above, in 1994 the tick size was one-eighth of a dollar, or 12.5 cents. On the morning of May 27, 1994, the press described an alleged conspiracy in which specific NASDAQ stocks were trading only at even eighths (two-eighths, four-eighths, six-eighths) and not at odd eighths (one-eighth, three-eighths and five-eighths). The conspiracy was detailed in an article in The Journal of Finance by business professors William G. Christie and Paul H. Schultz, in which such a pattern was flagged as unexpected. There was subsequently a change in the practice: after the press coverage, the same stocks started to be transacted in both even and odd eighths.

An investigation by the U.S. Department of Justice was initiated based on this inside spreads screen. The complaint alleged that:

[b]eginning at least as early as 1989, and continuing to the date of this Complaint,
a common understanding arose among the defendants and other NASDAQ market makers concerning, among other things, the manner in which bids and asks would be displayed on NASDAQ (the “quoting convention”). Under the quoting convention, stocks with a dealer spread of 3/4 point or greater are quoted in even-eighths (quarters). Under the quoting convention, market makers use odd-eighth fractions in their bid and ask prices only if they first narrow their dealer spread in the stock in question to less than 3/4 of a point. Defendants and other market makers have reached a common understanding to adhere to the quoting convention.9

The complaint also stated that “[t]he purpose and effect of the quoting convention has been to raise, fix, and stabilize the inside spread on a substantial number of NASDAQ stocks at a minimum of 1/4 point.”10 After an initial investigation the case was settled.

Potentially Triggering an Investigation on an Alleged Conspiracy and Manipulation of the Libor Rate?

Just as powerful the screens discussed above were to trigger investigations on stock options backdating cases and a conspiracy in the NASDAQ, we might question if the screens applied to a possible Libor rate manipulation described next might be equally powerful to trigger investigations.

On May 29, 2008, the Wall Street Journal alleged that several global banks were reporting unjustifiably low borrowing costs for the calculation of the daily London Interbank Offer Rate (Libor) benchmark.11 Specifically, the writers alleged that the banks were reporting costs that were significantly lower than the rates that were justified by bank-specific cost trend movements in the default insurance market. Although the Wall Street Journal acknowledged that its “analysis doesn’t prove that banks are lying or manipulating Libor,” it conjectured that these banks may “have been low-balling their borrowing rates to avoid looking desperate for cash.”

The Libor rate acts as a benchmark for the U.S. Dollar, Sterling, Euro, and Yen and represents the rate at which each of the banks in the 16-member panel perceive they could raise unsecured funds. Libor also is the primary benchmark for short-term interest rates globally.

Libor rates are quoted daily on 10 major currencies. The U.S. Libor rate emerges as follows: 16 banks submit daily rate quotes to the British Bankers Association (BBA), the middle eight rate quotes submitted are converted into Libor via a simple arithmetic mean, and the process is overseen by an independent committee of market participants and by the Foreign Exchange and Money Market Committee. Banks’ individual quotes are submitted anonymously. They are only known to each of the players and to the market in general once the Libor is set.

Since the Libor is used as a benchmark in setting interest rate contracts worldwide, its relevance extends beyond interbank lending to international conglomerates, small borrowers, and subprime mortgages. It is a central rate in interest rate swaps, and the majority of floating rate securities and loans refer to it. Several hundreds of trillions of dollars of swaps and contracts are indexed to the Libor. Given its importance, issues arising with a Libor rate over- or under-statement can have implications in many other markets and thereby have broad economic policy considerations and impacts.

Following the Wall Street Journal allegations, this author and co-authors Michael Kraten, Albert D. Metz, and Gim Seow investigated the possibility of such a manipulation.12 The authors studied the U.S. daily Libor rate and the individual bank quotes since January 2007 and compared it to other benchmark rates such as the Treasury Bill and the Federal Funds Effective Rate, as represented in Figure 1 below.
The striking pattern in this plot was the nearly constant one-month Libor rate (also verified for other maturities) since at least the beginning of 2007 until August 8, 2007. The authors applied a variety of bid-rigging and price-fixing style screens to detect a possible cartel amongst the participating banks and to identify its potential members. They found that a constant Libor would not have been predicted, and furthermore, there was a correlation of essentially 100% among individual sealed quotes by the majority of the participating banks during most of that time period. In a subsequent article, this author and co-authors George Judge and Sofia Berto Villas-Boas applied a different type of screen based on a mathematical law known as Benford’s Law and flagged the same period and banks.\textsuperscript{13}

What may motivate banks to artificially inflate or deflate rates? From a financial perspective, banks that are “net borrowers” would benefit from lower rates, while banks that are “net lenders” would benefit from higher rates. The nature of the composition of this group might generate an opportunity for collusion if the majority of these banks tend to be “net borrowers” or “net lenders.” Another possible reason why banks could be motivated to inflate or deflate the Libor, depends on their portfolio of assets, and in particular, on their derivative assets: even if a bank is a net borrower and would thus benefit from lower rates, depending on the interest rate derivatives it holds, it might still benefit more from a higher rate.

The red flagged features of the period ending on August 8, 2007, were: i) the nearly constant Libor for at least seven-and-a-half months; ii) the nearly identical (and constant) individual bank daily quotes for the majority of the participating banks; iii) the fact that reporting banks have very different characteristics which would seem to suggest differentiated individual banks quotes; and iv) the clearly different volatility pattern between the Libor rate and the benchmark rates Treasury bill and Fed Funds Rate when no reason seems to justify such differences in patterns.

Are the features observed in the data unusual? Yes. Do they prove that a conspiracy and manipulation have occurred? Not necessarily. Would such screens survive a motion to dismiss if brought on behalf of plaintiffs? Likely, but in any case, further investigation would have to be pursued to address the likelihood of these patterns as having
been produced through explicitly coordinated behavior by the banks.

**Conclusion**

A screen is a statistical test designed to detect conspiracies aimed at illegally manipulating a market. Competition authorities, academics and consultants have designed a variety of screens to detect competition problems, and their use has been increasing over time. Screens can be particularly useful to red flag potential conspiracies and manipulations which may warrant a closer look, triggering an investigation. As screens become more popular, and more data and computer power are available, their use by agencies, plaintiffs and defendants is likely to play an ever-increasing role in all stages of litigation, including detection.

**NOTES**


5. **LAMPERS**, pp. 10.


7. In antitrust conspiracy claims, the Supreme Court decision in *Bell Atlantic Corp. v. Twombly* has more recently raised the bar for pleading in such cases. The Court decided that simply alleging parallel behavior is not sufficient for an antitrust conspiracy claim to be sustained, and noted that plaintiffs’ allegations mainly focused on the defendants’ parallel conduct were just as equally likely under a conspiracy as under independent action. This decision marks a clear turn in the standards required in these types of cases by requiring enough factual matter and plausibility that a collusive agreement existed. Previously, and for the last 50 years, the Court allowed cases to proceed unless it appeared likely beyond doubt that plaintiffs would not be able to prove the facts in support of their claims. See *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544, 127 S. Ct. 1955, 1965, 167 L. Ed. 2d 929, 2007-1 Trade Cas. (CCH) P; 75709, 68 Fed. R. Serv. 3d 661 (2007).


9. United States of America v. ALEX. BROWN & SONS INC.; BEAR, STEARNS & CO. INC.; FIRST BOSTON CORP.; DEAN WITTER REYNOLDS INC.; DONALDSON, LUFSKIN & JENRETTE SECURITIES CORP.; FURMAN SELZ LLC; GOLDMAN, SACHS & CO.; HAMBRECHT & QUIST LLC; HERZOG, HEINE, GEDULD, INC.; J.P. MORGAN SECURITIES, INC.; LEHMAN BROTHERS, INC.; MAYER & SCHWEITZER, INC.; MERRILL LYNCH, PIERCE, FENNER & SMITH, INC.; MORGAN STANLEY & CO., INC.; NASH, WEISS & CO.; OLDE DISCOUNT CORP.; PAINEDWEBBER INC.; PIPER JAFFRAY INC.; PRUDENTIAL SECURITIES INC.; SALOMON BROTHERS INC.; SHERWOOD SECURITIES CORP.; SMITH BARNEY INC.; SPEAR, LEEDS & KELLOGG, LP; and UBS SECURITIES LLC. (U.S. v. Alex. Brown, et al.) Complaint for Equitable Relief for Violation of 15 U.S.C.A. § 1, July 17, 1996, para 40-41, pp. 8-9.


