

# WHY IS TRADE DESK SURVEILLANCE SO CHALLENGING?

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## Detecting Problematic Behavior

There was a time, not too far in the past, in which allegations of front running customer orders and marking the tape (spoofing) were somewhat commonplace. This is not say they were acceptable or right, but they were raised with some frequency. The introduction of better front-end systems with more controls and oversight seemed to put an end to this type of activity. However, a recent spate of issues that read uncannily like those of years ago are calling into question the ability of many firms to monitor and detect activity that may be indicative of problematic behavior.

If there is any doubt concerning the breadth or magnitude of this issue a few headlines provide some perspective:

- Former FX trading head indicted on front-running charges
- Firms to pay millions in spoofing settlement, CFTC says
- U.S. Investigating Foreign-Exchange Trading at Large Bank
- Firm to pay \$135 million to settle New York FX charges
- Former trader found guilty in front-running scheme
- Firm to pay \$350 million to settle foreign-exchange manipulation charges
- Firm to pay additional \$150 million for FX manipulation settlement

Given the scope and cost (direct and indirect), of these recent allegations across all types of trading firms globally there is renewed interest in addressing this issue. This problem is by no means constrained to the large investment houses. It has surfaced on the institutional buy-side and in firms that deal with all types of traded commodities, including electricity, mining companies, and agricultural commodity firms. In fact, in 2009 the SEC settled with 14 "specialist" firms (specialist firms purpose is to maintain orderly markets, for which they in turn have exclusive rights) for \$69 million for front running client orders. A paper from the ECB, "*Price Drift Before U.S. Macroeconomic News: private information about public announcements?*" provides additional context related to futures markets.

The headlines provide some indication of but a few of the issues that might be experienced. Others include:

- Exceeding Product Limits
- Exceeding Risk Limits
- Front Running
- Wash Trades
- Offsetting Trades
- Trade Concentration
- Marking the Close
- Out-of-Market Transactions
- Percent-of-Market Activity
- Open Interest Violations
- Cancellations, Fictitious Orders, Spoofing
- Price Ramping

- Market Movements
- Modified/Late/Missing Trades

Clearly the current approaches being employed to detect and stop this are lacking, but what exactly is missing?

## Current Trade Desk Environment

Trade desks of all types employ front-end (synonymous with “front office” as opposed to “back office” or operations) systems that facilitate trading as well as trade blotters, news access, internal settlement status, and a number of other functions. These systems can be vendor supplied, internally built, or often a combination of both. In many cases, systems employed are the culmination of mergers and acquisitions, making some approaches to this problem challenging. The vast functionality that these systems facilitate is evident in the number of flat screen monitors traders often have displaying different types of data. These front-end systems are monitored by supervisors and risk management, often employing “rules engines” to surveil much more than could be accomplished manually.


These front-end “rules engines” were designed to detect and alert or stop certain activity. For example, a trader may have a specific maximum dollar amount that can be traded; if this threshold is breached, an alert would be generated or the activity blocked. This is a very simple example but illustrates a point: rules engines are relatively simple, and traders are anything but.

Another interesting dynamic is that the number of sell-side traders (in aggregate) has decreased steadily for some time, while the number of buy-side traders has increased. However, this change has not been proportional. At the same time this smaller number of traders, aided in large part by automated trading capabilities, now transact in much greater volumes of all asset types.

## Risk Management

As the headlines illustrate well, the current environment is proving to be much more than many risk management efforts can handle. And take note of the firms mentioned in the headlines: these are not small, insignificant firms with limited budgets, but are among the largest in the world. If this is an illustration of the effectiveness of these firm’s risk management practices, is this representative of a larger problem?

It appears that in many environments “risk management” has been displaced by “risk reporting.” In other words, efforts are concentrated on generating required reports rather than on managing risks as they occur. While vast numbers of research and development efforts are funded for automated trading strategies, these resources are rarely employed in the same manner for risk systems. In many cases “risk management” is reliant on reports that are generated the next day in the best cases, and days, weeks, or months later in others. Managing risks dynamically should be the goal.



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This tact is not unlike that of traders themselves, who are constantly managing the dynamic risks of their blotters.

This “after the fact” approach to risk management is compounded by the nature of the rules engines, which are often recalibrated annually or semi-annually, meaning that there are times when the rules reflect an environment that is a year old. The reader must ask, would a risk averse individual trade on information that was generated a year ago? If timeliness and accuracy are the mark of an efficient risk management program, then clearly these tools are not addressing the need.

## What Technology Brings to the Solution

The need to improve timeliness and accuracy of current trade desk surveillance systems is by no means limited to a single asset class, geography, or even type of firm. As technology, and in particular computing speeds, have increased and become more affordable, there has been ongoing research into the application of this technology into trading desk surveillance. This work has involved risk management, technical, and experienced traders in the search of a solution that takes full advantage of the available tools.

Current risk engines have rules that work well in static environments, but we exist in a very dynamic world in which things change constantly. In order to detect and/or stop certain activity there has to be an automated ability to adjust rules so that they detect problematic activity, without generating large numbers of false positives. Fortunately, technology has provided some significant opportunities in this space when implemented and deployed appropriately.

The ability to dynamically adjust rules to reflect the environment is a direct result of the machine learning methodologies that are now available, in applications and open source solutions. By employing technologies that can “learn” trade desk environmental behavior, surveillance parameters can be automated to reflect the current environment. There is also a need to do this in a timely manner, optimally to generate alerts immediately, so that intraday corrections can be considered, rather than in a post trading environment. Once deployed these solutions can provide insight that static rules engines are incapable of offering.

## Conclusion

There is little doubt that the need for robust trade desk surveillance continues to be one of the more vexing problems for senior and risk management. The current generation of tools to monitor trade desks, employing static rules engines, has not provided the insight and capabilities needed. As the velocity and magnitude of trading continues to increase the need for more robust solutions becomes a requirement, rather than simply “nice to have.” By utilizing the latest technology to facilitate new methodology approaches, monitoring and detection become more accurate and timely.

Increased accuracy is a result of parameters that adjust automatically to the environment and behaviors of individuals traders. The timeliness is the result of dynamic functions that allow anomalies to be identified in real-time and to be addressed during the trading day, rather than in a report generated at some future point.

*Further reading at:*

<http://www.pionline.com/article/20180117/ONLINE/180119889/former-barclays-fx-trading-head-indicted-on-front-running-charges>

<https://www.wsj.com/articles/hsbc-to-pay-101-5-million-to-resolve-federal-fraud-charges-1516322004>

<https://www.reuters.com/article/us-usa-cftc-arrests/european-banks-pay-46-6-million-to-settle-u-s-spoofing-charges-idUSKBN1F119J>

<https://www.cnbc.com/2018/01/29/ubs-deutsche-bank-and-hsbc-to-pay-millions-in-spoofing-settlement.html>

## More Information

FRG would welcome the opportunity to speak with you concerning the findings of this paper, as well as how the approaches developed may fit into specific environments. For more information contact the FRG Research Institute at **Research@frgrisk.com** or 919.439.3819.

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