

## **Algo Arms Race Has a Leader - For Now**

Securities Industry News

December 18, 2006

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As algorithmic trading, particularly by hedge funds and advanced proprietary desks, has grown significantly--Boston-based research firm Aite Group says that it will account for a third of all shares traded in the U.S. this year and for more than half by the end of 2010--Credit Suisse has moved to the forefront of what is commonly described as a fiercely competitive arms race.

It's a field where bulge-bracket firms are constantly on the hunt for the next great algorithmic innovation, paying top dollar for relevant quantitative and programming skills and brandishing offerings with appropriately combative labels such as Guerrilla and Sniper (Credit Suisse), Ambush and Razor (Banc of America Securities), Cobra and Nighthawk (Instinet) and Dagger (Citigroup).

Amid the ever-intensifying battle for algorithmic supremacy--one in which there are plenty of potent and proven programs from which to choose--Credit Suisse's Advanced Execution Services (AES) is the one most frequently cited as being somewhere ahead of the pack. For example, in a survey of head traders in October by research firm Tabb Group of Westborough, Mass., Credit Suisse was most often mentioned as the algorithm provider of choice.

Likewise, in a July report by Connecticut's Greenwich Associates, based on input from 158 buy-side firms, Credit Suisse was the number-one algorithmic firm, ahead of Morgan Stanley and Goldman Sachs & Co. And Institutional Investor magazine's survey last year of 300 traders, who sized up algorithm providers in terms of performance, ease of use, breadth of product and knowledgeability of sales force, put Credit Suisse's AES unit on top in all four categories.

Dan Mathisson, managing director and head of AES, is clearly pleased by the recognition--and is quick to point out that being a pioneer in the development and provision of algorithms to the buy side brings lasting advantages. "We have been at this game the longest," he noted, "so we've had all the problems you can possibly hit and have had more time to clean everything up."

Credit Suisse AES was the first bulge-bracket outfit with an algorithmic-strategy specialty when it was launched in 2001--a claim backed up by **Bernard Donefer**, an adjunct associate professor at New York University's Stern School of Business and an independent analyst of algorithmic offerings. "They were the first to really make a

commitment to algo trading," he said, adding, "They also had a really good product from the start."

Credit Suisse has also gained healthy respect from competitors. Carl D. Carrie, head of product development in the electronic client solutions (ECS) group at JP Morgan Chase & Co., called AES "a formidable adversary" and "one of the early pioneers in the algorithmic trading space--clearly the one with the best brand recognition. Kudos should go to them for initiating the adoption of algorithmic trading on the buy side."

"Credit Suisse's AES group went seriously into this space before most other firms realized there was anything there, and they have done a very good job of building from that initial strength," observed Robert Almgren, head of quantitative strategies for electronic trading services at Banc of America Securities.

Mathisson, a statistical arbitrage trader at New York-based hedge fund DE Shaw & Co. for eight years and then a prop trader at Credit Suisse for two before launching AES, said his early embrace of algo trading--he had developed his own, personal set of software in collaboration with several computer programmers--was a factor in Credit Suisse's quick entry.

Since introducing two algorithms in 2002--a volume-weighted average price (VWAP) offering that Mathisson calls "the Vwapper" and a participation-rate-matching algo that "had not been done before"--Credit Suisse AES has grown from a team of three to 50 full-time employees and upward of 130 if you include those involved in connectivity, legal and back-office activities. Mathisson said there are more than 20 quantitative experts or relevant PhDs on the team, including an econometrics expert who regularly conducts statistical tests on algorithms before their release to traders.

#### Guerrilla and Other Tactics

From the start, the New York-based AES unit brought in revenue, Mathisson said, which was promptly reinvested in the business and "allowed us to expand our footprint. ... By 2003 we were already in Europe and Asia with algo offerings, [when] a lot of our competitors hadn't even launched their first desk."

The prosperity was reflected in the addition of outposts in London, Tokyo, Hong Kong, Singapore and Sydney. The AES unit serves more than 1,500 clients worldwide; 43 percent are hedge funds and the rest are long-only asset management funds, according to Manny Santayana, head of marketing for Credit Suisse AES.

The most widely used AES strategy is Guerrilla, launched in 2004. Credit Suisse calls it, in terminology of its invention, "a signal reduction algorithm," or one that quietly

and stealthily seeks out liquidity from both public venues and hidden, or dark, liquidity pools. Mathisson said it is closely followed by Sniper, which specifically goes to dark pools and crossing networks.

Guerrilla, which is continually updated, revised and tweaked, "is our flagship product, offered on a global basis to clients at the push of a button," said Mathisson. Unlike many other strategies, it was not designed to hit a benchmark or match a certain participation rate, but rather was built from the ground up to find liquidity without signaling intent. "I don't think that anyone has come close to duplicating its trading logic," Mathisson boasted.

Adam Sussman, an analyst and consultant with Tabb Group, attributes AES's favorable ratings in part to the fact that Credit Suisse was the first to realize the potential of liquidity-seeking algos, which have gained a considerable following over the past year. "Not only are Credit Suisse algos on a lot of desks," said Sussman, "but they are also receiving a good portion of the flow on those desks where their algorithms are installed." Credit Suisse's marketing efforts have also borne fruit: "Not only did they come out with a stronger product early on, but they had a much more aggressive sell strategy than other people," Sussman said.

#### Marketing Void Filled

Santayana, a veteran IBM salesperson who joined Credit Suisse in 2000, recalled that AES had to overcome a critical marketing challenge at the start: It didn't have a sales force or a front-end trading platform akin to Goldman's RediPlus or Morgan Stanley's Passport over which to distribute its algorithms. Santayana's solution? He tapped the Bloomberg network as an early partner, and Bloomberg's 400 salespeople became full-time distribution allies.

From there, 50 distribution partners came into the marketing web, including order management system suppliers such as Charles River Development and Linedata Services. "In this way, we fit seamlessly inside the trader's workflow process, and at the same time we had instant worldwide distribution," Santayana said.

Credit Suisse's lack of a front end may actually have worked to its advantage, allowing the firm to focus on its core competency and leave more mundane trading matters to others. Merrell Hora, a VP on the algo team, said that free of front-end system concerns, Credit Suisse could "devote more time to developing the best algorithms and devote more resources to improving execution performance." The downside is that those algos may lack the "stickiness" they'd have if tightly integrated into a front-end system, and analysts say they must be constantly updated and refreshed to keep customers happy.

Then again, Credit Suisse was able to address deep-seated concerns on the buy side about leakage of information to prop traders on the sell side. The AES unit hired PricewaterhouseCoopers for an independent audit to assure clients that their trade information was safe and their anonymity preserved.

But pioneering and first-mover advantages are no guarantee of continued success in a business that in many respects changes moment by moment as competitors pour more and more money and people into the arms race.

### Algo's Big Three

Aite Group, in an October report on bulge-bracket firms and their algorithmic positioning, said that Goldman Sachs and Morgan Stanley, with roughly 2,000 and 1,000 clients, respectively, joined Credit Suisse in the top tier. At the same time, Aite saw impressive growth--and growing strength--at Citigroup, which as of October served 356 clients through the alternative execution business unit it started in 2004; JP Morgan, with 250 clients of the ECS unit launched in 2003; and Lehman Brothers, with 200 users of Lehman Model Execution, which began in 2004.

John Wightkin, co-founder and managing partner of Naperville, Ill.-based analytical firm Quantitative Services Group, said that there is no standard, objective measure for comparing algo offerings, and he therefore questions the meaning of the surveys that anoint Credit Suisse. "From what we have seen from our testing and analysis, there are other providers out there that do a good job of providing algorithms, making sure that they are doing what they are supposed to be doing and providing quality at reasonable cost," said Wightkin.

Donefer of NYU noted that Goldman Sachs' liquidity search tool Sonar has been extremely well received by traders, as has the firm's Sigma X liquidity aggregator, which accesses a broad swath of liquidity ranging from Goldman's internal flow to Mount Pleasant, S.C. executing brokerage Automated Trading Desk and alternative trading and crossing networks such as Liquidnet.

Smaller, agency-only brokerages are also making a mark in algorithms, among them Miletus Trading and EdgeTrade, both of New York. Tabb Group's survey placed Miletus and EdgeTrade at numbers 11 and 12, respectively, and climbing.

### Racing to Stay Ahead

Of course, Credit Suisse wouldn't be sustaining its leadership if it was resting on its laurels. Its menu includes Guerrilla, Sniper, VWAP and TWAP (time-weighted average price); In-Line, an algorithm designed to work an order around a current price; PHD, which oversees multiple algorithms to function as a portfolio hedging device; Tex, a

strategy for working an order at a pace appropriate to the existing liquidity; and Pathfinder, a smart order router designed to accommodate variations in market structure including the impact of Regulation NMS.

On top of that, said Mathisson, "we have dozens and dozens of custom tactics in which we tweak a specific tactic or build one from scratch to fit a particular client's need." The group has worked on more than 30 customized algos this year.

Of late, the firm has been testing algorithms for additional asset classes. AES Options was released earlier this year and AES Futures is expected to come out of beta test shortly.

According to Hora, who has a PhD in economics, at least one project team is developing a statistical model to advance the volume-forecasting capabilities of current and future algorithms. "I can't tell you about the really cool stuff--that's proprietary information," he said, though he does feel that one characteristic that may distinguish his firm from others is its attention to statistical models and expertise in probability theory. Noting that some rivals are touting "adaptive algorithms" with built-in intelligence that emulate human reactions to market changes, Hora said: "The reason why AES is where it is today is that its algos were always adaptive."

AES is also seeking out, partnering and occasionally investing in innovative trading platforms alongside Credit Suisse's private equity unit. One deal, in September, was with Upstream Technology, a real-time, Web-based order management system (OMS) targeting money managers in the \$500 million-plus range. Upstream's system does not require the installation of software or presence of a large IT staff.

Other relationships of this ilk have been forged with Lake Forest, Calif.-based electronic trading firm FutureTrade and New York-based TradingScreen, which has multi-asset-class OMS and execution management capabilities. "These relationships provide us with a kind of think tank to help us understand how to build a bigger, better product, both from a distribution and core-algorithm perspective," said Santayana.

Stress-testing algorithms in multiple markets and on a global basis is yet another way that the AES group expects to maintain its prominence. "It's not just the competition that is growing for these algorithms, but the complexity of their final design as well," Mathisson pointed out.

He also emphasizes the importance of service. The firm does not use software when it is helping a client develop an algorithm, but instead favors an in-person, consultative approach. "We usually send out a consulting team to work directly with

a client, comprised of a quant, salesperson and programmer to discuss exactly what it is that the client is trying to achieve," Mathisson said. "With computerized trading, you still need to provide a very high level of client service, someone they can call when something goes wrong or to guide them through an options trade."

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