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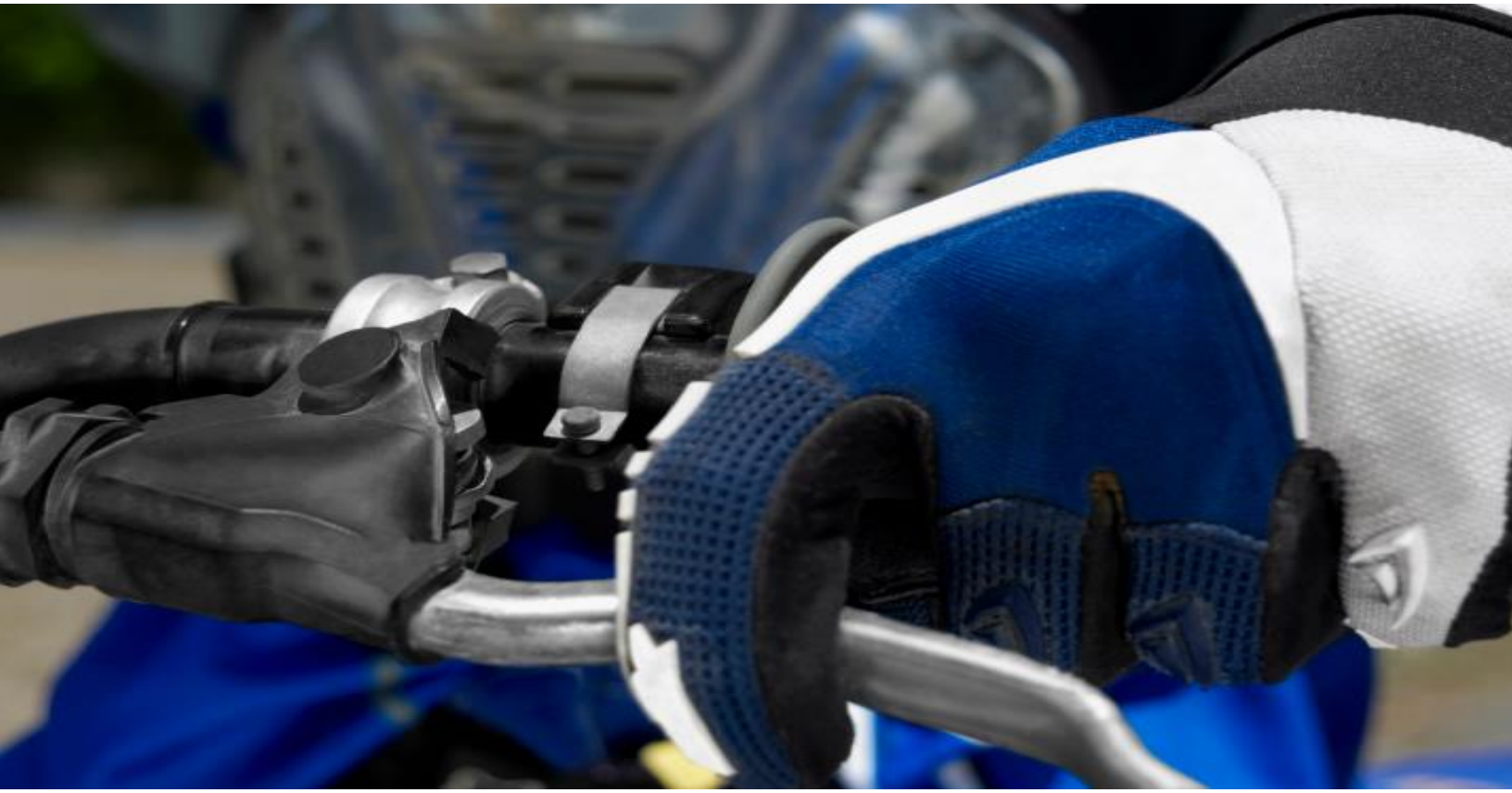

Algos in Futures Markets:

Shifting into High Gear

Futures algorithms provided by futures commission merchants (FCMs) and facilitated through front-end trading systems are beginning to mature. Current users have new demands to support existing practices and are looking to further build out their advanced execution strategies. At the same time, a number of large buy side institutions, including those that have traditionally shied away from using futures algos, are showing interest, with a rising number of requests being received by algo providers.

As providers continue to build out their electronic offerings, the development and use of futures algos are shifting into high gear. Futures markets offer a rich environment for algos due to product diversity, margin efficiencies, and cross-market appeal. Greater demand for algos is a direct result of the market's growth, with more complex strategies and the need to automate processes prime factors driving adoption. For optimal results, firms must use automation to improve trading desk efficiencies, lower execution risks, and better compete with market participants already using and upgrading their advanced execution strategies.

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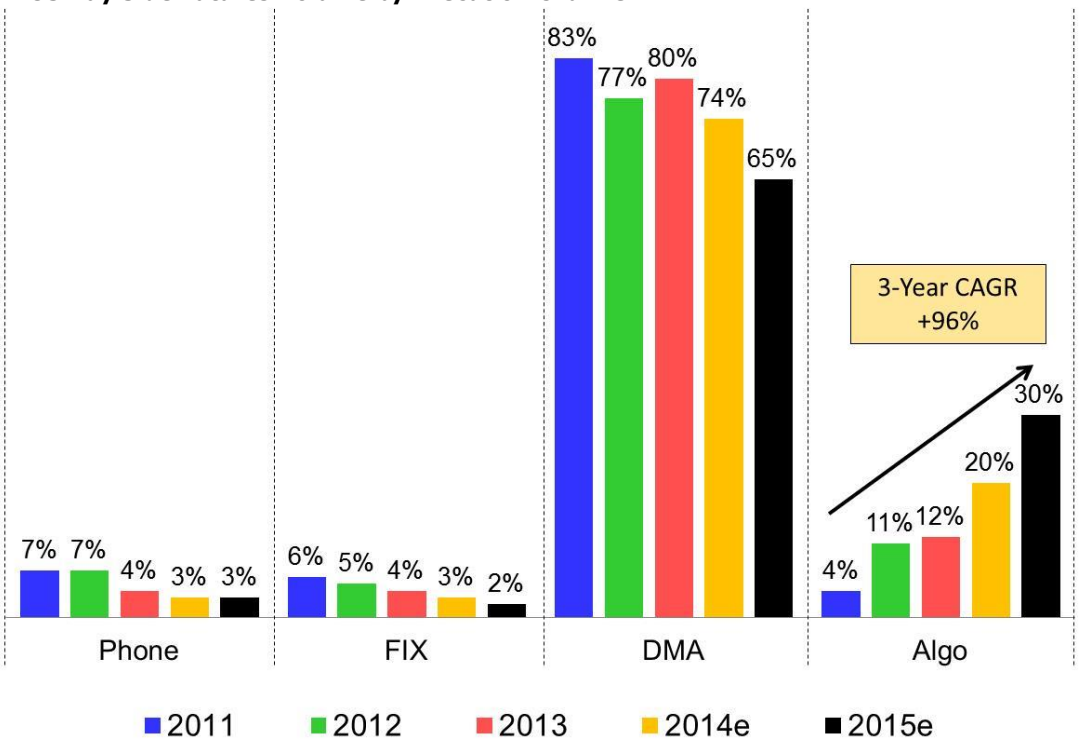
Growing Use of Automated Trading Strategies

Completing a trade in the futures market has traditionally been relatively straightforward and low risk. Futures contracts were liquid and products were relatively inexpensive to trade. Large buy side institutions, including hedge funds and long-only asset managers, would provide orders to sales traders or use point-and-click technology to execute directly into futures markets. And even as markets accelerated, a buy side trader could manage an execution by either selecting a destination or simply passing off an order to a sales trader, especially when parent order sizes were relatively small.

Over the past few years, calling in orders to a broker's sales desk inevitably resulted in the sales trader using execution algorithms, but this voice-brokered execution also resulted in dependency issues with sales traders. Today, institutional buy side traders, wanting to preserve their execution intentions, have started to shift from traditional order execution methods to electronic tools (see Exhibit 1).

Exhibit 1: US Buy Side Futures Volume by Execution Channel



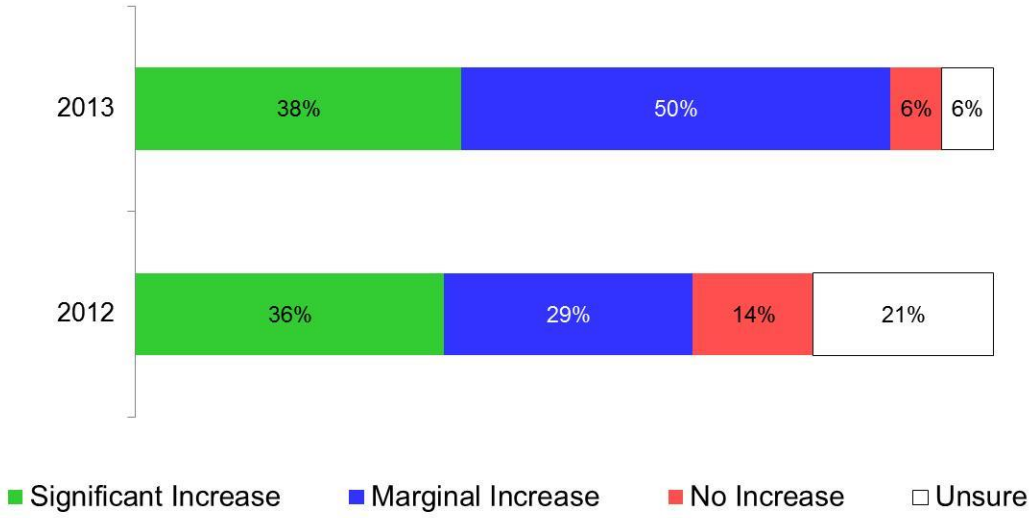
Source: TABB Group

However, moving the capabilities of the broker's desktop to the buy side's desktop has led to the transfer of execution risk. Automation inherently requires buy side traders to manage orders in markets that they may not be familiar with or have experience trading in. Furthermore, the ability to point and click using direct market access (DMA) tools has become a riskier proposition as more advanced execution strategies represent the other side of trades. This transfer of execution risk, then, has become a major factor in convincing

institutional futures traders, including hedgers, to pay closer attention to the role of algorithms in markets.

TABB Group expects algorithmic trading in futures markets to increase over the next two years. This expansion will be especially noticeable as tangential growth occurs in futures markets and institutional traders seek to alleviate execution concerns stemming from information leakage with sales traders. Futures volumes will increase as regulations (namely, Dodd-Frank) incentivize portfolio managers to move away from over-the-counter markets and new products, such as swap futures, become market catalysts (see Exhibit 2).

Exhibit 2: FCM Expectations of How OTC Rules Will Impact US Futures Volumes



Source: TABB Group

As institutional futures traders' desk activity picks up, they will continue to seek out tools that can assist in managing orders. Call this a natural catch up to equity markets, but the ability to obtain desired fill quantities will become important as trading costs impact net performance. In addition, a number of buy side accounts will use futures algos to aggregate trades, seeking to improve desk efficiencies and free up trader resources.

New firms are also expected to start using futures algos. In particular, traditional swaps users entering futures markets will alter the liquidity profile of existing markets. In interest rate futures markets, highly automated market makers and prop trading firms are greedily anticipating this flow. OTC traders accustomed to dealing in blocks or OTC markets will require algos to help them execute in comparable size. Staying competitive will certainly mean acquiring more automated trading capabilities by different market participants.

Brokerage Offerings, from Simple to More Complex

Automation demands from clients are providing revenue opportunities for brokers, technology providers, and the exchanges that must support algorithmic trading. As stated above, a major reason institutions are using algorithms is their desire to know how their orders are processed and to limit execution risk. By micromanaging trades and pushing their favorite buttons, buy side traders get to pick and choose how they want to interact in markets. However, this luxury requires two things: knowledge of algorithm strategies and connectivity with algorithm providers that can provide optimal trading results.

To date, many strategies used by the buy side have focused on the simplest trading needs (see Exhibit 3). For FCMs, extending equity tools to futures has been a low-cost, simple move to attract new clients and build deeper relationships with existing clients. In the most liquid futures markets, spreads are expectedly thin and therefore the use of automation tools offers incremental advantages (and causes further spread compression). In these cases, brokers make most of their money on clearing and settlement. In less liquid products and markets, with execution algorithms that provide measurable execution advantages, brokers extract higher commissions.

Exhibit 3: Futures Algo Strategies and Estimated Percent of the Market

Strategy	Example	Estimated Percent of Market
Simple	Stop, Iceberg, Market on open/close (MOO/C)	60-70%
Benchmark/Scheduled	Volume-weighted (VWAP) or Time-weighted (TWAP), Arrival price (AP), implementation shortfall (IS)	10-20%
Synthetic Order Type	Percentage of volume (POV), Mean reversion , Mechanical (Iceberg, Peg)	5-10%
Multi-Market	Calendar spreads, Butterfly spreads, Inter-market pairs	< 5%
Liquidity-Seeking	Add/take liquidity based on quantitative models, Hide/seek	< 5%
Customized	Based on exact specifications	< 1%

Source: TABB Group

In this regard, "simple" does not always mean easy. Simple algorithms are relatively straightforward for brokers to build and support, but perfecting even the most basic algorithm can involve years of development. Depending on the complexity of the strategy, multiple parameters need to be available on the order ticket. For example, iceberg orders

that periodically refresh and nibble at total parent orders, executing only when the previous order gets done, can require multiple parameters for aggression levels and determining when to enter or exit a market.

In addition, FCMs say buy side firms are beginning to realize that a simple algo is not sufficient for all order types. Buy side traders using benchmark, or "scheduling," algos are a popular strategy because they are sensible for large parent orders over a certain time horizon or price threshold according to a predetermined benchmark. This additional amount of complexity is beginning to have a noticeable impact on order book activity by chopping orders into smaller sizes. The way that futures market participants must interact to find liquidity is becoming more dependent on understanding these intricacies in how to minimize a trading footprint.

Thus, buy side traders continue to look for different strategies that can help with short-term trading decisions. Synthetic order types and multi-market algos that base orders on "contingent" events are helping to fill this void. Percentage of volume (PoV) and mean reversion strategies can assist traders with their approach to price movement.

Traders are also making better use of risk profiles and using algos designed specifically for the markets they trade. For example, contingent algos in fixed income markets may use logic around macroeconomic data releases and Treasury auctions, and often interpret unstructured data and events. Similarly, pairs strategies assist with executing between different markets (e.g., futures vs. equity) and products (Treasuries vs. OTC swaps).

Lastly, liquidity-seeking algos and customized strategies for exact trading requirements continue to gain popularity. To be sure, "liquidity seeking" means something different in futures markets than it does in equity markets. In futures markets, a liquidity-seeking algo will react to market conditions and accommodate volume characteristics of a product at a single exchange. Smart order routers (SOR), on the other hand, aggregate liquidity across multiple destinations such as dark pools and exchanges. In this regard, buy side futures traders are learning to demand unique matching objectives, even as most algo trades are done via pre-existing vendor or broker-built algos.

Buy vs. Build Decision

While a number of model-driven firms insist on building their own algorithms to differentiate themselves from the crowd (including very active CTAs that are notorious for building their own algos), many large institutions with more traditional strategies acknowledge the benefits of outsourcing to algorithm providers. Relying on others for execution performance means institutions do not have to fund resources to interpret regulations, dissect market structure, or be responsible when coding requirements need updating.

The sell-side is happy to accommodate, believing its expertise around building and developing front office technology can effectively cater to institutional needs. In fact, half of leading FCMs say one of the major criteria for broker selection today includes being able to provide cutting-edge trading platforms and algorithm suites (see Exhibit 4). Brokers and banks focused on specific asset classes and truly understanding what clients want will have a better chance of appealing to market participants looking for a total package. As client demands evolve, FCM innovation will depend on this relationship.

Exhibit 4: Best Ways to Differentiate your FCM from the Competition

Differentiation	Frequency of Response	Customer Evaluation
Client Service	56%	High-touch coverage model, Customized reporting, Responsive/consistent/accurate support teams
Perceived Stability	56%	Strong credit rating, High capital-leverage ratio, Transparency with assets, Insolvency procedures
Joint Infrastructure	50%	Strength of OTC/Futures Clearing, Flexible back office technology, Prime brokerage integration
Front Office Technology	50%	Cutting edge front-end trading platform, Algo development, Order types, TCA
Market Access	50%	Developing/Emerging market access, Regional teams, Local rules expertise
Financing	44%	Capital or balance sheet for repos, Margin Financing, Collateral Management
Product Diversity	44%	Multi-product (Exchange-traded/OTC/Cash/FX), Product expertise, SEF connectivity
Commitment to Business	25%	Word of mouth reputation, Hiring trends, Conference/meeting attendance, Trust

Source: TABB Group

However, staffing and costs associated with building sophisticated algorithms are a major investment and many leading FCMs remain in cost-cutting mode, handicapped by budgets and the low profitability that futures algos currently provide. They also can have internal conflicts with dealer desks as the focus is to support the most profitable business line. As institutional demand for both dedicated client-facing relationships and providers that can provide unique ways to generate alpha only increases, competition will continue to heat up.

A combination of higher development costs, testing, documentation, and deployment are driving industry change. Specifically, regulatory updates and ongoing rule changes require significantly more resources to develop and to adhere to. New rules also mean that smaller FCMs could be forced to white label and rely on larger FCMs to outsource their execution capabilities. On the other hand, independent brokers have an opportunity to gain market share. For example, US Treasury markets traditionally have been deep, liquid markets that have not required a sophisticated algo with which to participate effectively.

When thinking about buy versus build, an "in between" factor also must be considered. Many front-end trading platforms, including execution management systems (EMSs), provide third party capability to write code and connect to brokers. Other platforms include very simple order management systems (OMS) – which do not always include market data or analytics – and can provide an alternative for getting a strategy up and running quickly. Advantages here include broker neutrality and tailoring execution strategies directly to the investment strategy. Specifically, trade tickets are generated using FIX orders and sent via broker pipes directly to trading engines.

In addition to brokers, leading complex event processing (CEP) vendors are offering pre-packaged, highly integrated and customizable (or "white box") order execution strategies that are similar to broker execution algorithms. Once again, smaller brokers may white-label a CEP vendor's algo suite offering. Together, these players support all customer segments (without proprietary development capabilities) to achieve higher levels of trade process automation.

As derivatives markets evolve, it's going to require a significant investment for a buy side firm to build its own algorithms. All execution algos are asset-class agnostic, with generic structures from one broker to the next. As such, the complexity behind the various types of strategies available in the marketplace – and the intelligence behind when and how to use algorithms – is what separates competitors. While the return on investment (ROI) may favor an in house solution for more advanced users, most institutions will find that execution algos provided by brokers that understand the various nuances of products and markets will be sufficient.

Customer Demands

While some brokers have taken the algorithms they created for the equity markets and replicated those same strategies in the futures markets, others have built a futures-specific suite. A so-called best-in-class strategy is a differentiator, but that is becoming more common and so providers are facing a dilemma. Too sophisticated of an algorithm offering can scare users away while too few dials as part of the strategy can appear too simplistic.

In solving this problem, futures brokers and technology firms are spending a lot of time and effort determining the right number of parameters to present the right appearance for order entry tickets. Algorithm providers are also educating users about existing strategies. During these conversations, clients are demanding to understand how products trade, including liquidity profiles and settlement procedures, as well as what to expect from the strategies. As such, brokers must demonstrate their ability to provide responses that meet all of the necessary client demands and continue to provide sufficient answers to requests as futures algo adoption increases and education takes hold (see Exhibit 5).

Exhibit 5: Top Buy Side Demands vs. Sell Side Responses

Buy Side Demand	Sell Side Responses	Cutting Edge
Electronic Support	Varies by broker	Guide on when to use algos, feedback, and client attention
Quantify Results	Transaction Cost Analysis (TCA)	Pre-trade, real-time, and post-trade reporting
Asset Class Coverage	Equity, Commodities, Fixed Income, Foreign Exchange	Distinct approach for each asset class
Market Access	Support order types for popular markets during live market hours	Global Connectivity to over 100 market centers, 24/6

Source: TABB Group

1. Electronic Support

Institutional traders are looking for help understanding how and when to use algorithms as part of their execution strategies. According to brokers, the main questions they need answered are associated with basic functionality and approach. Clients want to ensure that the algos they are using are the best available in the market and as a result they are spending more time and effort on separating marketing hype from reality. This includes

building tools that know when to be passive versus aggressive and can accommodate market conditions for the types of products and matching engines in the market.

Similar to the complications of having a self-driving car, there are many variables why an algorithm could experience accidents. In this regard, many buy side traders remain paranoid about using strategies they either do not understand or find difficult to use. Electronic support teams on the sell side must continue to help buy siders with information about how to tweak algos to get them to behave as expected.

Some brokers have done a better job at "hand-holding" traders to understand when to use certain strategies or provide feedback on how to appropriately use a certain strategy. This type of feedback is usually provided though voice interactions, the best being if the sales trader picks up the phone and calls the trader directly as the trade is taking place.

2. Quantifying Results

As execution costs become more meaningful to profits, buy side traders are more cognizant than ever about execution risks across products and markets. This is not to suggest that execution risks have been ignored in the past, just that the risks of trading in futures markets are increasing as algos become a more important execution channel.

For the sell-side, transaction cost analysis (TCA) is about legitimizing their offerings and providing a mechanism to show clients the value of using their electronic services. Without TCA, buy-side firms may continue to send VWAP orders to brokers based on execution prices rather than performance. Over the long term, this is not an ideal solution for either the buy side, which is trying to separate marketing hype from reality, or the sell-side, which wants to demonstrate offerings that can outperform competitors.

Going forward, the goal of brokers should be to quantify results and help buy side clients make informed execution decisions. This goal should include capturing less of the spread and minimizing trading signals. For asset managers, performance validation includes seeing detailed order analysis spanning pre-trade, real-time, and post-trade results. It includes results by strategy, product type, and the amount of skew from an optimal execution over different time horizons. To perform a peer analysis, this data would then be extracted into a file or fed into execution systems.

Part of the challenge with quantifying results for futures trades is that executions are difficult to measure using traditional benchmarks (the exception being index futures). Standard VWAP orders may include a different benchmark profile, different time horizon, or may have different interpretations of what the most appropriate calculation is. With inconsistencies across products and markets, execution quality is usually measured by slippage or against arrival price (e.g., closing price).

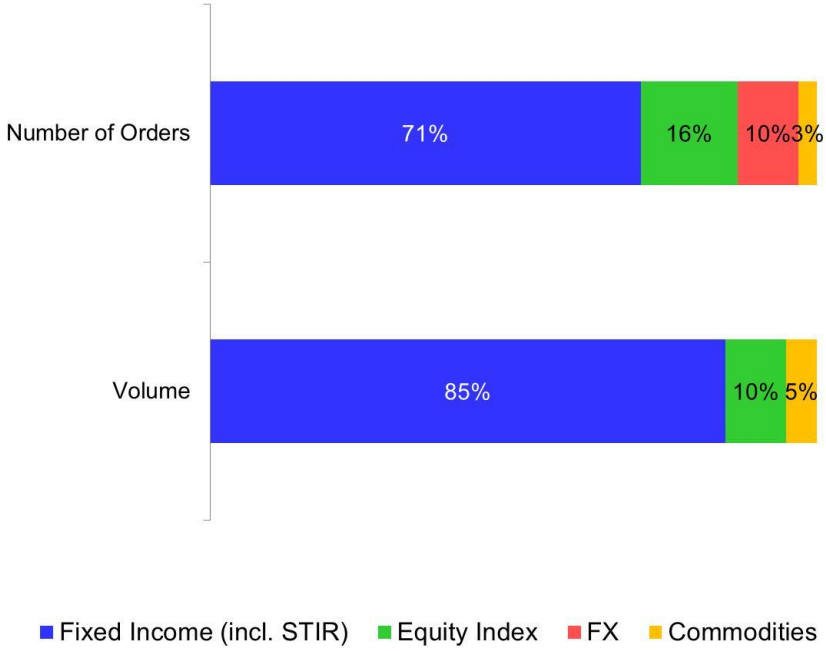
In addition, most brokers will agree that there is no perfect futures TCA offering in the market today. Ironically, just as many will admit to working on making their solution better. Brokers say that overcoming the challenge of having a robust TCA solution is near

impossible, with broker-neutrality a key issue for winning buy side trust, not to mention the large cost element to building out capabilities for little return. Nevertheless, many are still trying their best to compliment their algo suites with better, trusted, and quantifiable results.

3. Asset Class & Market Coverage

Buy side firms want to trade efficiently across different asset types and geographies that comprise the futures markets. But many unique nuances, different market participants, different rules, and reasons why algos can be inappropriate certainly exist. The reason is that futures instruments include wide-ranging volume profiles across geographies. In addition, different product types trade differently based on expirations and the month in which they are being traded. Exchange-matching engines also vary between asset type. For example, percentage allocation of pro rata in fixed income markets versus first in first out (FIFO) in equities.

Exhibit 6: Algo Usage by Asset Type, Percentage of Orders & Contract Volume



Source: Fidessa, TABB Group

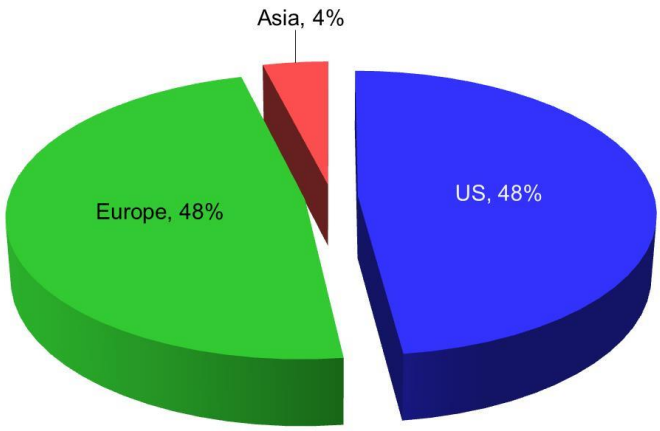
In terms of product type, the more sophisticated algorithms are used in the most popular asset classes. To wit: Fixed income markets – including short-term interest rates – account for more than 70% of algorithmic orders and 85% of the volume in the market today (see Exhibit 6). As a result, the different types of algorithms used in fixed income markets are the most developed, followed by equity markets, foreign exchange (FX), and commodities.

TABB Group expects algorithmic trading to increase across asset types beyond interest rates. In particular, equity and FX sell-side desks have gained trust in using algos built by their firms and will continue to rely on them as they help buy side customers enter and exit markets. In commodity markets, FCMs have also noted an uptick in algo usage over the

past year as futures markets have grown, with more trading occurring on exchanges and better investment opportunities emerging.

In terms of geographic usage, futures algorithms have equal representation in both the US and Europe. In Asia, adoption remains in the single digits despite a significant amount of futures volume (see Exhibit 7). This is because in Asia, there is a very cautious approach to algos as markets can be wide and thinly traded. As a result, simpler algos are being used in Asia, while most of the same strategies are used across the US and Europe.

Exhibit 7: Futures Algorithm Activity by Geographic Region



Source: Fidessa, TABB Group

To win over the buy side, brokers need to understand and adapt to local market conditions. However, global investors will be more likely to support a product they are familiar with regardless of the geographic location. Algorithms that provide consistent behavior and approach to markets, taking into consideration unique characteristics of the underlying market, will have a better likelihood of gaining long-term traction than those that don't.

Going forward, both the US and Europe have strong upside potential for algo adoption since a lot of the OTC market keeps volumes away from electronic markets. This dynamic is changing as OTC markets develop and trading activity moves from voice brokers and call around markets to futures exchanges. In Asia, many products do not have a significant volume profile or trade too thinly to use algorithms, but greater demand in markets and newly-launched night trading desks could change how international traders access and participate in these markets.

Regulatory Impact

The consensus view of FCMs is that regulation increases the cost of providing algos to the Street but does not change how buy side firms use them. The increasing frequency of rogue algorithms has caused regulators to express their concerns and they have been emphasizing algorithms are tested, validated, and monitored before being placed into markets. These protocols, while challenging to interpret and at times difficult to implement, increase the costs of both designing and innovating algo suites.

Specifically, the industry has been focusing on the Commodity Futures Trading Commission's Concept Release on Automated Trading, which addresses the development and testing of algorithms before they get put into markets. This focus on testing, audit trails, release procedures, and surveillance is meant to ease regulators' concerns. In essence, regulators want to avoid the catastrophe of an algorithm causing massive unintended market movements, disruptions, or failure.

Universally, this regulatory focus makes sense: Having a set of protocols in place that better aid market surveillance and provide better details about where orders begin and end is not unreasonable. Yet the concept of being able to ensure that "nothing will go wrong" remains next to impossible. Technology failures and glitches have become a part of life in the markets today, and while measures are being taken to ensure better algo coding, there is no full mandate that could guarantee complete protection from mistakes or problems.

This conundrum has not prevented regulators from trying, however. German regulators have proposed market identification for parent algos. In Korea, there have been changes to tag each algo trade. And in India, SEBI has mandated testing of each algo before production. Universally, these mandates coincide with greater oversight and can help to prevent old problems from occurring again.

New rules also mean that brokers that develop their own algos must consider their decision to be involved in the electronic trading business. With algo development more complicated and expensive, the tangential benefits of providing automation tools to clients must emerge clearly over time or the investment becomes a losing proposition. In this regard, larger FCMs are in a better position to support the necessary scale and all the operational support required under a more holistic client relationship.

In terms of algorithm releases, providers will contend that they have practices in place that ensure best execution and suitability. For example, FCMs will do a test run in a simulated environment before going to market. This beta testing may go on for months ahead of time and eventually may include a slow release to internal desks with smaller orders being worked before the algorithm is handed over to clients.

Going forward, brokers will have to contend with the increased costs they face because of continued scrutiny. High frequency trading firms and black box firms will howl at items such as order execution ratios and minimum holding times that could jeopardize their business strategies. Neither will slow down the focus on automation, it will just put more pressure on

firms developing algos to prioritize their efforts, with regulatory costs and pressures in mind.

Conclusion: "Algos of the Future"

The next phase of algorithm development will include smarter ways to trade and work through investment and trading decisions. Many long-only firms will continue to use futures algorithms primarily to hedge positions but will begin to experiment with using futures algorithms to gain alpha. These firms will require tools that not only help put money to work but also mitigate trading risks across the risk profiles of different markets.

Algos of the future will include tools that predict events or base decisions on uncorrelated and correlated factors. "Multi-dimensional" arbitrage (MDA) is a concept we have crafted to symbolize the cascade of automation in the form of tools and knowledge to conduct ever more sophisticated pattern recognition in financial markets and to harvest ever more complex forms of alpha. At its most basic level, this idea includes pairs trading algos but it may also evolve to include portfolio optimization algos, or being able to match execution strategies and product types based on the underlying investment strategy.

Ultimately, the buy side will continue to select how their investment strategies work but the sell-side will remain in a good position to help execute those strategies through automation efficiencies. In this regard, another trend to watch is the tipping point between buy side and sell side algorithm development for basket trading. For buy side clients, this could include a tool kit in which traders upload trading content and the FCM manages data and puts together a basket of trades relevant to buy side requirements. One can quickly see how this would make sense for interest rate markets, where positions across the yield curve get balanced based on duration-neutral investment decisions.

Algos of the future will also be able to make decisions from conditional factors that include structured and unstructured data. This could involve reacting and interacting in markets based on sentiment, news releases, or event analysis such as economic news announcements. In the most basic use case, VWAP orders would change based on when news releases get issued and knowing how aggressively to trade around marketplace volumes and interactions. Social media has clear overlaps here, with more traders looking to normalize the vast amounts of data available, forming conclusions based on putting together variables in models and transferring those intentions into markets.

Algos of the future will also provide more opportunity for derivatives markets interoperability. As previously discussed as part of TABB Group's "Algorithmic Revolution" report, inter-market tools could include mispricings between multiple securities, markets, asset classes, and/or "factors," in which various futures often represent the factors. An example might include a non-US energy stock against energy and interest rate futures. Or a trade between cash, futures and swaps. Or a basket of currencies versus gold futures versus a gold exchange-traded fund. Or a market neutral portfolio of equities, the neutrality of which is further refined with commodity, interest rate and FX futures.

Lastly, algos of the future will include an emphasis around the development of the futures "roll." Quarterly futures rolls represent a large part of the volume that goes through futures markets, and algorithms for rolls need further development to capture spreads and assist traders with this routine process. With profitability opportunities abounding, TABB Group expects futures roll algorithms to gain emphasis by brokers in the near term.

About

TABB Group

TABB Group is a financial markets research and strategic advisory firm focused exclusively on capital markets. Founded in 2003 and based on the methodology of first-person knowledge, TABB Group analyzes and quantifies the investing value chain, from the fiduciary, investment manager and broker, to the exchange and custodian. Our goal is to help senior business leaders gain a truer understanding of financial market issues and trends so they can grow their businesses. The press regularly cites TABB Group members, and members routinely speak at industry conferences and gatherings. For more information about TABB Group, visit www.tabbgroup.com.

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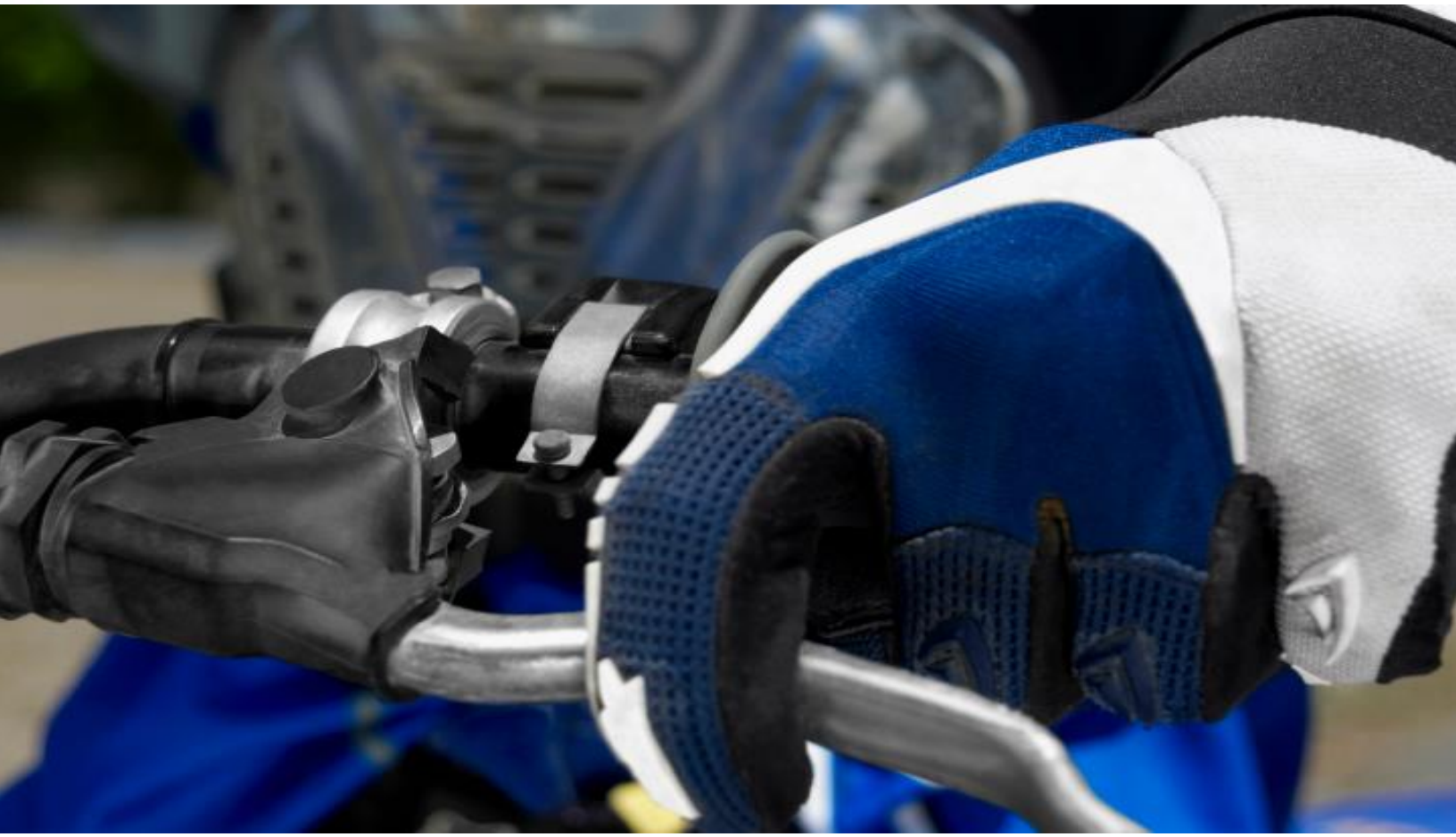

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