

Comments Submission on File No. S7-02-10

**SEC** Concept Release on  
**Equity Market Structure**

**April 21, 2010** or before

**FAIRNESS ISSUE CAN LIKELY BE RESOLVED**

Points of View from an Optimistic Retail Investor

**Q:**

What is algorithmic trading system?

**A:**

In electronic financial markets, algorithmic trading works by collecting, analyzing and calculating streams of market information in real time, such as price quotes, trading volumes, and news, and automatically placing buy or sell orders of a defined quantity based on an advanced mathematical model that automatically generates the size and the timing of orders based on objectives of custom built trading strategies specified by the constraints and parameters of the algorithm

**Q:**

**P41**

What is the implication that the speed of trading has increased to the point that the fastest traders now measure their latencies in microseconds?

**A:**

The fact that the fastest traders now measure their latencies in microseconds suggests that their algorithmic trading systems are running in real time with deadline that has reached microsecond level.

In information technology, real time typically refers to detecting and responding to external events nearly simultaneously with their occurrence. It is employed mostly in systems in which the results of the computation are used to affect a process while it is occurring. Thus, a real time system is considered to be mission critical.

Real time computation is failed if it is not completed before its deadline, where its deadline is relative to an event, such as the arrival of new market data in the instance of automated security trading. A real-time deadline must be met, regardless of system load.

The high frequency algorithmic trading system operated by fastest professional traders nowadays is usually a real time automated trading program running periodically at a time interval assignable by traders, for example, 1 microsecond per period.

Therefore, in this instance, the real-time deadline is 1 microsecond. Since the arrival of new market data will occur every 1 microsecond, the real time computation of this particular high frequency algorithmic trading system must be completed within 1 microsecond, before next cycle of updated quotation and market information is occurred.

Since the modern computer is able to execute billions of instructions per second, the time frame of 1 microsecond is long enough for today's fastest traders to implement highly sophisticated algorithmic strategies.

As an example,

The 2010 Intel Core i7 Extreme Edition 1980EE is running at 147,000 MIPS (million instructions per second) at 3.3 GHz.

Thus, this periodically running real time algorithmic trading system is able to make decisions to buy, to sell or to skip during each period of 1 microsecond.

If the total trading hours is six hours per trading day for a particular security exchange, this automated high frequency trading system will run 21,600,000,000 cycles ( $6 \times 60 \times 60 \times 1,000,000$ ) throughout the trading days, which means there are 21,600,000,000 opportunities to make decisions to buy, to sell or to skip.

It is far beyond human capabilities. That's why algorithmic trading is also known as algo trading, robo trading, black-box trading, or high frequency trading.

**Q:**

**P41**

Is the current market structure fair for long-term investors?

**A:**

Since the fastest traders are so powerful as robots in Hollywood movie now, the current market structure appears to be a two-tier network activities. Thus, it is clearly unfair for long-term investors, particularly, small individual investors.

Yet, as the market is of all the investors, for all the investors, and by all the investors, long-term investors are also entitled to have equal opportunities to utilize the technological infrastructure developed in algorithmic trading era.

Retail investors are entitled to read best price and various market information in real time.

Retail investors are entitled to read best price and various market information in real time.

Then, retail investors are entitled to timely place their orders automatically in real time.

Then, retail investors are entitled to execute their orders automatically in real time with the same execution quality that HFT traders now enjoy.

**Q:**

**P41**

Is it necessary or economically feasible for long-term investors to expend resources on the very fastest and most highly sophisticated systems or otherwise obtain access to these systems?

**A:**

YES, there is an urgent need for all long-term investors to use technology as defensive tool to perform at least more competitive risk management strategy in today's two-tier market structure.

And, YES, it is economically feasible in fact.

As we all know, everyone is entitled to have a fair usage of freeway no matter you own a car or not. For those who do not own a car, they are still entitled to utilize the convenience of freeway by taking a shuttle bus at cheaper cost. Therefore, shuttle bus service must be available in order to solve the problem of fair usage of freeway.

For the same reason, all investors should have a fair usage of information superhighway being used in high frequency trading environment today. Therefore, public algorithmic trading service must be offered by all online brokers to help long-term investors to have equal opportunities to utilize the existing information superhighway.

## **Algo-Club**

By upgrading current service to retail investors, online broker may offer a new service known as Algo-Club for interesting parties of long-term investors to subscribe at an acceptable monthly membership fee.

Long-term retail investors can thus spread the cost by subscribing to Algo-Club to share the same engineering resource to pursue algorithmic trading . Usually, members of Algo-Club will pursue only basic high frequency trading algorithm in the beginning, such as algorithmic stop loss strategy. Therefore, it is economically feasible for them to compete with professional HFT traders at least in certain aspects.

The competition among Algo-Clubs offered by various online Brokers will further help to:

- Reduce the cost of services, and
- Enhance the service quality

Therefore, it is financially feasible that long-term retail investors can be benefited by the Algo-Club concept, the potential total solution to resolve fairness issue.

**Q:**

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Does the fact that professional traders likely always will be able to trade faster than long-term investors render the equity markets unfair for these investors?

**A:**

YES, it is unfair for long-term investors obviously.

In the long run, what professional HFT traders make could be essentially based on what long-term investors lose, as HFT traders almost always win in every aspect repeatedly ...

Market Situation	HFT Professional Trader	Long Term Retail Investor
Uptrend Sharply	<b>Make big money quickly and efficiently</b>	<b>Usually unable to timely activate any buy or sell</b>
Downtrend Sharply	<b>Get out of situation easily by risk management algorithms</b>	<b>Swimming with sharks due to bad stop loss execution</b>
Uptrend Slowly	<b>Make big money quickly and efficiently</b>	<b>May make some money by buy-and-hold strategy</b>
Downtrend Slowly	<b>Get out situation easily by risk management algorithms</b>	<b>May trigger stop loss execution with bad results</b>
Vibration Quickly	<b>Make big money quickly and repeatedly</b>	<b>Usually unable to timely activate any buy or sell</b>
Vibration Slowly	<b>Still make money a little bit slowly but repeatedly</b>	<b>May be able to place one or two orders</b>

**Q:**

**P41**

Do the different trading needs and objectives of long-term investors mean that the disparities in speed in today's market structure are not significant to the interests of such investors?

**A:**

No, damage to long-term investors is substantial in fact.

Long-term investors almost lose in every aspects.

Even they may smile in slow uptrend market,

HFT traders still take advantages over them.

Most long-term investors typically pursue buy-and-hold strategy and hope that the uptrend market will arrive soon to make a profit.

Because of spread and cost issues, it was not easy for long-term investors to always make a profit even twenty years ago, when high frequency trading did not exist.

Since short selling to make profit is not always permissible due to regulations, to deal with downtrend market, the only option for long-term investors is to adopt traditional stop loss strategy to trigger an automated sell when the price setting is hit.

In a two-tier trading network today, long-term investors' traditional stop loss strategy are encountering a hard time of quality execution to compete with HFT traders' more powerful intelligent risk management algorithms running in real time.

As a result, from probability point of view, it is likely that the accumulated loss for long-term investors may easily exceed their profit accumulated through buy-and-hold strategy over a period of time.

Therefore, there is a priority need for long-term investors to upgrade their traditional stop loss strategy so that they have equal opportunities to protect their asset by new generation of intelligent risk management algorithm running in real time in HFT way.

In this instance, long-term investors may now also enjoy their automated high frequency trading system to execute intelligent stop loss algorithm during each period of 1 microsecond. Thus, if the total trading hours is six hours per trading day for a particular security exchange, this system will run 21,600,000,000 cycles ( $6 \times 60 \times 60 \times 1,000,000$ ) throughout the trading days, which means there are 21,600,000,000 opportunities to make decisions to trigger the stop loss algorithm immediately for subsequent execution.

By keeping evolving original algorithm, long-term investors will be able to compete with professional HFT traders in a much more fair way when attempting to get out of the situation in the downtrend by real time.

**Q:**

**P41**

What standards should the Commission apply in assessing the fairness of the equity market?

**A:**

To realize the principle of fair trading in algorithmic era, while providing service to HFT traders in anyway, online brokers should also equally offer Algo-Club services to assist interested long-term retail investors to pursue any form of HFT algorithmic trading in real time.

Thus, the easiest part is how to identify unfair practice of online brokers.

**Q:**

**P41**

Is it unfair for market participants to obtain a competitive advantage by investing in technology and human resources that enables them to trade more effectively and profitably than others?

**A:**

Even though they may have the freedom to do so, the results will be unfair to others.

Thus, the key question is how to help others to fight back to balance the situation.

Since retail investors can share the same resource of engineering team by subscribing to Algo-Club, the key role of Algo-Club is to help retail investors to realize their custom algorithmic trading system by providing a more cost effective engineering service.

Such engineering services provided by Algo-Club may cover various effort, such as:

- custom specification development
- real time computing program coding
- performance simulation test

Thus, the engineering services provided by Algo-Club can help its members to adopt various kinds of HFT algorithms, from simple version to gradually evolve to more complex ones.

For example,

John owns 2000 shares of Google. Initially he has developed HFT stop loss algorithm running in real time if the price hit \$450. The execution results are not good enough because it is not easy to sell 2000 shares of Google quickly.

John further adopts slicer algorithm by dividing 2,000 shares into 20 lots of 100 shares and then execute HFT stop loss algorithm concurrently to trigger sales of 20 lots of 100 shares in real time with substantial improvement in execution results.

Another example of more advanced risk management strategy for long-term investors is regarding how to deal with a scenario called momentum ignition in which traders play directional strategy by submitting orders designed to induce upward or downward movement in a particular stock.

In addition to existing stop loss + slicer algorithms, John further Asks Algo-Club to integrate intelligent algorithm capable of identifying momentum ignition to his system. Therefore, John's intelligent HFT risk management algorithm is now able to effectively defend the momentum ignition situation by monitoring the market in real time.

Reversely, long-term investors can also utilize engineering service of Algo-Club to improve their profit taking process offensively.

For example, In addition to traditional buy-and-hold profit taking strategy, John further adopts slicer algorithm by dividing 2,000 shares into 20 lots of 100 shares and then execute HFT profit taking algorithm to concurrently trigger sales of 20 lots of 100 shares in real time when price reaches a desirable level.

This is just a minor start. John can always keep evolving his algorithms to pursue more aggressive strategies, such as artificial intelligence algorithms with self-learning capabilities eventually.

Once engineering effort to custom develop algorithmic trading system for each retail investor is done, the next role of Algo-Club is to help their members to run their servers on daily basis to concurrently perform numerous automated security trading activities in real time.

For example, if the Algo-Club of a particular online broker has 1,000 members, this Algo-Club will have to manage all of their member's servers in perfect working condition running at an ideal site by connecting to the security exchange direct.

For members of Algo-Club, this is their cloud computing data center running automated trading in the cloud end.

This is certainly a dream come true as long-term retail investors can now enjoy state-of-the-art HFT trading services while they are working.

However, to make sense , the HFT algorithms are so fast that their subsequent execution quality must be also fast enough.

So, how can they really compete with professional HFT traders in terms of execution quality?

**Q:**

**P59**

Many exchanges offer co-location services that enable exchange customers to place their servers in close proximity to the exchange's matching engine. Does co-location provide proprietary firms an unfair advantage because they generally will have greater resources and sophistication to take advantage of co-location services than other market participants, including long-term investors?

**A:**

YES, it is unfair. By saving micro-seconds of latency each trade, the professional HFT traders can take accumulative advantage quickly & repeatedly.

**Q:**

**P59**

Are brokers generally able to obtain and use co-location services on behalf of their customers? If so, are long-term investors harmed by not being able to use co-location directly?

**A:**

It is a minimum requirement that brokers must be able to fairly utilize co-location service.

Then, at least, long-term investors must be able to utilize co-location service via Algo-Club offered by each online broker.

Co-Location is basically a parking lot for servers of traders. Thus, courtesy space must be reserved for Algo-Club just like how handicap parking spaces are reserved for a fair usage of the facility.

## **Rules for Handicap Parking Spaces**

Rules for handicap parking spaces dictate that there be at least one handicap space in a parking lot of 25 spaces or less. More handicap parking spaces are required as the parking lot gets bigger. For a parking lot of 100 spaces there must be at least four handicap parking spaces. For a parking lot of 500 there must be at least nine handicap parking spaces. After that it must be 2 percent of the total number of spaces.

If you can't beat them, join them!

Long term investors can become  
HFT traders by utilizing  
Algo-Club services of an online broker.

THANK YOU

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**Retail investors are entitled to read best price and various market information in real time.**

**Then, retail investors are entitled to process such quotation and market information in real time to timely make immediate investment decision.**

**Then, retail investors are entitled to timely place their orders automatically in real time.**

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**HFT  
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**Long Term  
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**Uptrend  
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**Make big money quickly and  
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