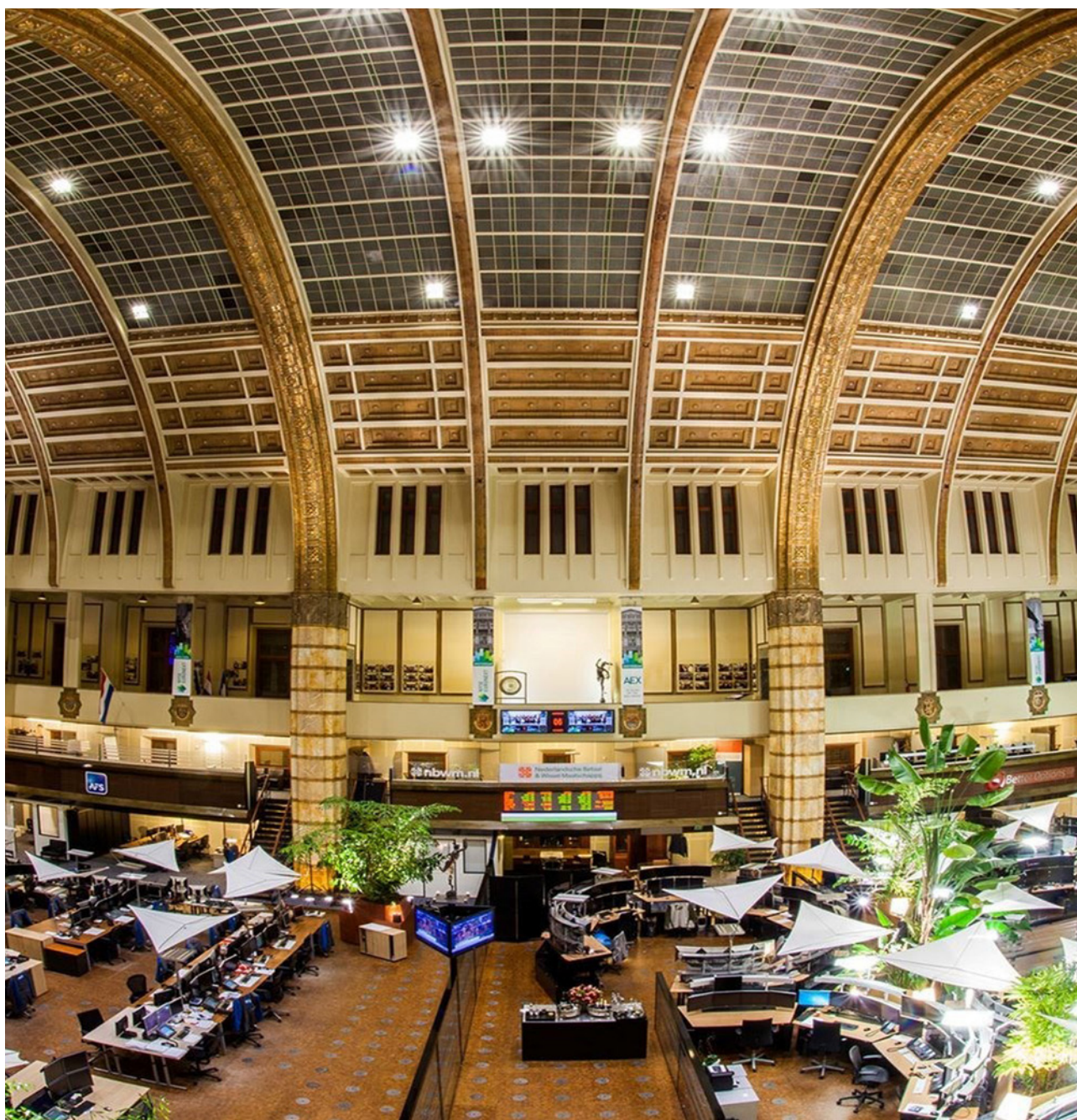
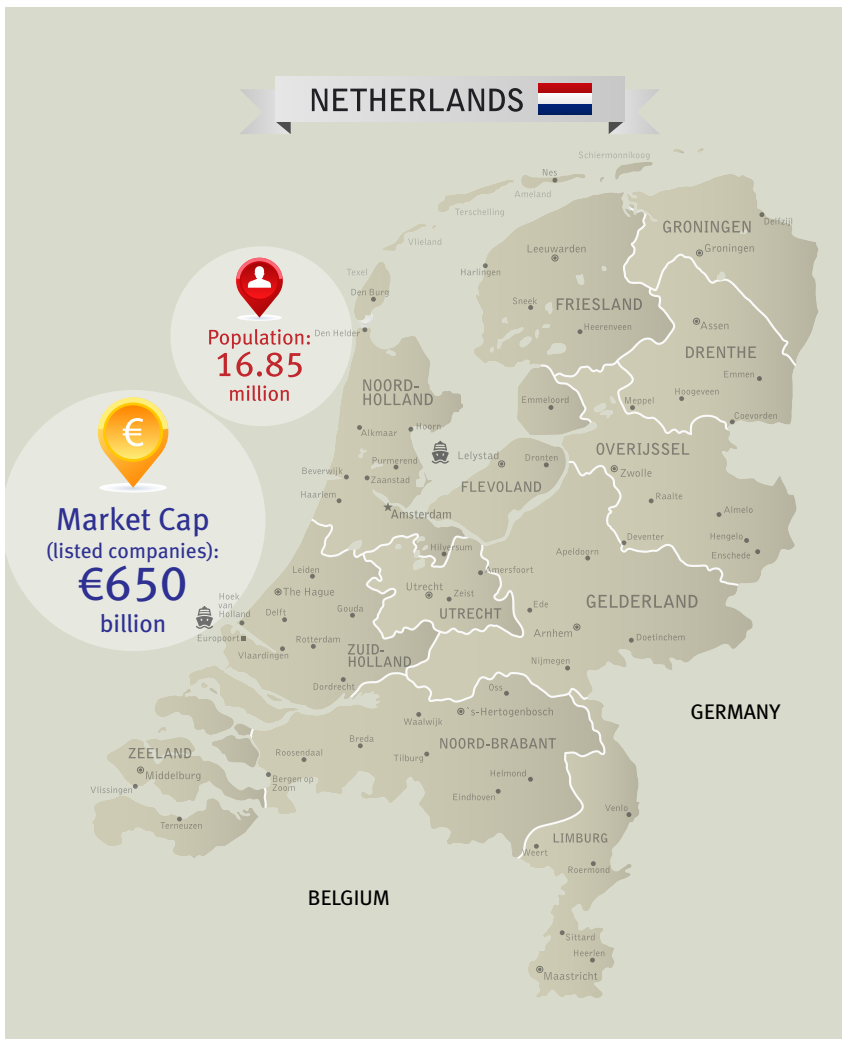


Dutch pride: a trading nation weighs its options

It's hardly surprising that technologically advanced trading took off in one of the world's first modern economies. A historic spirit of industrial entrepreneurialism and merchant capitalism, backed by a sophisticated financial sector means that the Netherlands is home to pioneering trading firms that have a long reach into global markets.



Netherlands Stock Exchange
Source: Euronext



“It is clear there is a tension between wanting to maintain diversity and the heavyweight work coming out MiFID and other regulations.”

Piebe Teeboom, Senior Policy Adviser, AFM

Rights and responsibilities

The Netherlands is home to three large market makers, but also to some thirty medium and small sized trading firms. About a dozen of these have been granted a license as an investment firm by the Dutch regulator, the AFM (Netherlands Authority for the Financial Markets). Except for a few, these are all active in automated trading though only a handful are considered HFT.

The AFM is tasked with overseeing financial market conduct for these firms as well as for traditional asset managers, banks and brokers across the country. It was one of the first regulators to take a detailed look at how high frequency trading impacts on orderly functioning of the markets.

Within Europe, the Netherlands has pioneered a regulatory approach known as a ‘twin peaks’ system. This means a separation between conduct and prudential aspects of financial supervision, with the latter being within the aegis of the Dutch central bank. For trading firms the AFM acts as the lead supervisor. However, both authorities cooperate closely in the operational supervision of those firms.

Aside from the licenced firms, the automated trading community consists of ‘locals’ that are only active as market makers in the derivatives markets, and consequently are currently exempt from MiFID.

To the extent that they are a member of a trading venue, or a client of a DEA (direct electronic access) provider, their status is going to change under MiFID II, as such firms will need to get authorised under the new rules, explained Piebe Teeboom, senior policy adviser at the AFM.

Among other duties, Teeboom is tasked with ensuring that systems and controls for algorithmic trading firms are in place according to European financial regulators ESMA’s guidelines. As such, he has worked closely on MiFID II implementation, which will entail market microstructure requirements like tick sizes, order-to-trade ratios, kill switches and circuit breakers as well as

But it’s not all budding tulips. Observers of incoming European legislation warn that smaller players could be left behind as a consequence of regulation. Anna Reitman reports.

When the Dutch trading community discusses the exceptionality of its markets, terms that consistently come up are: history, diversity and transparency.

For history, the country’s capital, Amsterdam can boast a few important firsts. In the 17th century, merchant capital gave rise to the need to manage risk, which led to the first organised stock exchange. Ultimately, this paved the way for the first market makers, and, more recently, the first European options exchange in the late 1970s.

“A lot of trading firms that have blossomed in the Netherlands come from a presence on the European Options Exchange in the 70s,” said Johann Ladd, secretary general at FIA European Principal Traders Association (EPTA). “It’s reflected in the larger option houses we have here.”

Three of the largest firms headquartered in Amsterdam – IMC, Optiver and Flow Traders – are founding members of EPTA. But it’s not just those largest firms the Association is concerned about as anticipated European regulations roll out.

“There is concern that we will see MiFID II enforced without sufficient proportionality, and that will place a burden on smaller trading firms, of which we have many in the Netherlands,” Ladd said. “The future is so much in the hands of the policy makers at the moment.”

Ladd is referring to organisational and business continuity requirements for trading firms that do not differentiate between a bank with tens of thousands of employees worldwide versus a trading firm with four employees. For example, requiring that small trading firms have duplicate hardware lines to back up trading in the event of an incident.

“Small firms who don’t otherwise have any obligations to clients, or other regulatory obligations, should have the right to fail,” she added.

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Johannah Ladd, secretary general, FIA EPTA



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general organisational requirements for firms that undertake algorithmic trading activities.

“In the area of algorithm and HFT trading, given that we have a substantial community here in the Netherlands that is also active globally, we feel a responsibility as the supervisor of those firms to be on the ball, to constantly further develop our own knowledge,” Teeboom said.

HFTs and related firms under the AFM’s remit are going to have to deal with more prescriptive rules, more documentation and processes as well as more formal market making obligations.

That has its positive aspects. As firms comply with the increased regulation, it should alleviate many of the concerns expressed – rightly or wrongly - by politicians and other market stakeholders, as well as provide a greater degree of confidence in orderly markets. But costs are going to become a factor and could impact the smaller firms more and consequently the diversity of



Maurice van Tilburg, CEO, Euronext Amsterdam

participants, Teeboom noted.

“It is clear there is a tension between wanting to maintain diversity and the heavyweight work coming out MiFID and other regulations,” said Teeboom. “Given that that is a European political decision, it is not something we can do much about but we intend to reach out to the trading community to help them cope with the new regulatory framework.”

RegTech upgrade

Given the way markets are moving, the AFM has invested in technology – hardware and software, as well as personnel – and highlighted data management as a priority. The AFM has set up a data-specific team in anticipation of the huge volumes of data national regulators will have to deal with.

“The number of inputs will greatly grow. It is already very big but we will get much more reported to us. It is important to be able to

“...the more diverse the ecosystem, the better it can deal with shocks and disruptions.”

Maurice van Tilburg, CEO, Euronext Amsterdam

analyse that, for example with visualisation tools, which are a way to make sense of the big amounts of data coming our way. Additionally, we are very much involved with the European projects within ESMA to make sure that all the systems are working well together on the supervisory side,” he said.

Aside from this focus on market surveillance tools and expertise, the AFM in its markets supervision has three other key areas of attention: internal controls and pre-emptive outreach to market participants identified in potentially manipulative trading patterns; quality of price formation and its relationship with market microstructure; and best execution issues.

The latter concerns itself with the algorithmic strategies themselves – what the business model of the algo is, so to speak, explained Teeboom. Amid widespread criticism of the impact HFT has on institutional orders, it could actually be the brokers that need to be reminded of their responsibility.

“If you get a big order from an institutional client, and – as sometimes happens – you dump the whole order in the opening auction, then it’s easy pickings, for other market participants including HFTs,” said Teeboom. “When the institutional investor discovers that, HFT gets blamed but perhaps they should rather blame the broker.”

Market players

In terms of market share, algorithmic trading represents around 10% across Euronext derivatives markets. For its cash markets, that’s around 20%. Having a diversity of participants, said Maurice van Tilburg, CEO of Euronext Amsterdam, is important for the buy side flow finding its way to the market.

Van Tilburg echoes the sentiment that upcoming regulations threaten to impact smaller firms disproportionately.

“The Dutch market traditionally has smaller trading firms that trade for their own account and for their own risk, and that take part in our markets. If you look at MiFID that is upcoming, then the European legislation tends to easily oversimplify the situation and treat them the same as large investment banks,” he said. “There is a trend towards applying material capital requirements to these small trading houses. We understand that risk needs to be managed, regulation needs to be there, but we want to make sure that the voice is heard that rules proposed are really serving a purpose.”

For example, Market Wizards operates a



Remco Lenterman, Adviser, FIA EPTA

trading arcade (an electronic trading facility) at the exchange. Better Options is another such electronic access provider off-site. The role of the trading arcade, Van Tilburg noted, should not be underestimated.

“This is a legitimate way of acting in a market, and contributes to the diversity of the ecosystem. And the more diverse the ecosystem, the better it can deal with shocks and disruptions,” he said. “The diversity of trading parties is important to keep the quality of the market, as it leads to tighter spreads and cost benefits.”

Euronext is also unique in creating a single order book across different countries, meaning that trading flow of companies listed in multiple locations comes into one order book. It was a significant legal, procedural, and contractual exercise to ensure that traders in different countries get the same guarantees and constraints, and that flow isn’t fragmented.

“Fragmentation in general is not really what they want, they would like choice in trading, but still they need good pools and depths of the market and assets,” Van Tilburg said.

In terms of creating a level playing field among participants the exchange has taken a technology-intensive approach, which is to calculate a continuous band width around the price of derivatives. So, for an option with a book price, there is a theoretical price band using volatility, current value, price evolution, among other factors. If an order comes in outside the band, it’s rejected.

This, explained Van Tilburg, catches both rogue algorithms and retail traders’ mistakes.

Dutch psyche

As an international market, Euronext Amsterdam is home to some big IPOs with investors distributed across the US, London,

France and other parts of Europe. In 2014, it had three of the five largest IPOs in Europe – NN Group (\$2.1 billion: €1.9bn), Pershing (\$2.7 billion: €2.4bn) and Altice (€1.3 billion).

This year, the largest were GrandVision, which came in at \$1.2 billion (€1.1bn), as well as Refresco Gerber with a market cap of €1.2 billion. ETP (exchange traded products) liquidity provider Flow Traders made a debut at €500 million, valuing the company at some €1.5 billion.

Flow Traders, along with IMC and Optiver, are one of the major success stories of local firms becoming global multinationals. Dennis Dijkstra and Sjoerd Rietberg are co-CEOs, and credit the Netherlands’ supportive environment, a society open to foreigners and focus on technological innovation for that success.

In addition, prime brokers and regulators have helped the industry thrive.

“ABN Amro Clearing has been historically a big supporter and a key relationship bank for a lot of electronic liquidity providers. They’ve grown globally together with the industry,” said Dijkstra. “And because we have a long history, the local regulators are very familiar with our industry. They are, in Europe, at the forefront of passing legislation on a European level. The history, the skills and experience benefit the growth.”

Credit is also due to a ‘Dutch psyche’ that anticipates paradigm shifts, said Remco Lenterman, former managing director at IMC and an advisor to FIA EPTA.

“These firms have clearly been very successful in the floor-based arena, but likewise realised that they had to invest in technology, in quantitative skills, and adjust the types of people they hired as a result,” Lenterman said.

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That means recruiting for technical proficiency backed by mathematics and physics from across the world.

During his tenure at IMC, Lenterman was also a member of the supervisory board of TOM (The Order Machine), a venue that competes with Euronext Amsterdam. The relationship between TOM and the exchange has been strained, and included legal wrangling over intellectual property rights.

What makes TOM unique, said Lenterman, is that it is the first successful attempt at competing in derivatives. He compares it to Chi-X’s entry into the equities space. But in derivatives, newcomers in other jurisdictions have found it hard to chip away at powerhouses such as ICE and CME, for example.

“TOM now has a market share of close to 50% in the Dutch option market,” he said, adding that it was a regional initiative spurred on by Optiver, IMC and Nasdaq in phases. “It’s good to see a Dutch initiative to foster more competition in the derivatives space.”

But whether competition will flourish among trading firms remains in question. Lenterman too sees the barriers ahead for smaller trading firms coping with incoming regulations.

Will it lead to consolidation? Though this might be expected, practically, these firms are often small partnerships with personalities and cultures that might not mesh.

“It’s different from consolidation between larger firms that think more in terms of what makes sense commercially,” said Lenterman. “If these firms are created around personalities, that is an extra hurdle.”

Juicy gossip

If you want to know more about some of those personalities, you can follow Jack, an options trader with some 17 years’ experience, and a blogger. He chooses to remain anonymous, because “without anonymity I would have to ▶

“The market as a whole, its transparency, and the big firms, is certainly something that chauvinistic Dutchies can be proud of.”

Jack, Amsterdam Trader blog

be the cheerleader of the trading community, writing positive posts only. That wouldn't interest anyone.” Jack writes the Amsterdam Trader blog, which is a bit like the gossip column of the Dutch trading community, providing regular updates for anyone interested in who is worth how much, moving where and why, as well as more technical goings-on in the market.

The blog started for fun on a “rainy day in 2009” said Jack. “While the nature of the trading business is secretive, all traders were curious how others were doing. And for me at least, it's a world full of colourful stories.”

The Dutch market is far more retail oriented than markets in the rest of the world, he noted, but it's gone through a massive transformation, along with the participants.

Back in the days of floor trading, before 2003, there were dozens of entities on the trading floor, along with at least 10 different broker firms and a lot of small local firms trading options. After migration to the screen in late 2012, this stayed the same in a modest version, he said.

One after another, the small market making firms folded, as did the brokers who connected to voice brokerage for large blocks.

Now, there is one broker left – AFS – and just a few market making firms with only a handful of traders each. IT and developers outnumber

the traders, Jack said, and most options trade on three exchanges – Euronext Amsterdam, TOM and Eurex.

The major direct market access provider is ABN AMRO, with other indirect providers for individual traders being Market Wizards, Gets, or Better Options.

ABN AMRO is “getting more difficult everyday with demands and requirements”, he said, but added that every trader is somehow, directly or indirectly, connected to the clearing arm: “They have a monopoly after KBC left the clearing business few years ago.”

The options business meanwhile is becoming increasingly automated in the big stock options thanks to liquidity, tight spreads and ease of entry and exit. All these developments over the last decade, he said, are to some extent commercially driven.

“The spreads tightened in the market and easy money doesn't exist anymore. As a whole, the market has become more efficient. The challenge for exchanges is to keep up with the changing markets – transaction fees are still on the expensive side. Which was fine in the era of wide spreads, but not anymore.”

At the same time, in stock options aside from the large caps, dependence on just one or two firms has increased and market depth deteriorated.



He also recognises a regulatory burden that will probably hurt the last few small firms. Although firms such as IMC, Optiver, Webb, Scrocca and Flow Traders, for example, will probably have covered all their regulatory burden, others might be in a “fragile position” with some being new to the world of regulation.

“Smaller firms who go through licensing will be able to outsource a lot of compliance tasks and/or buy products to achieve them - such as automated monitoring systems, order data, algo-flagging, timestamping, transaction reporting, to some extent annual self-assessments with the help of external auditors. But this of course will raise costs significantly compared to status quo. And they’ll have to invest in a compliance function internally.”

“I expect the regulatory burden to be lowered, in an exemption for small market makers. Otherwise, they will need to consolidate with other firms.”

For outsiders peeking in, Jack said the market is easy to understand and thinks there’s a pretty positive view of the market and participants.

“The market as a whole, its transparency, and the big firms, is certainly something that chauvinistic Dutchies can be proud of,” he said. “Even if it’s just because of the luck to have an early well-run option exchange in the Netherlands.”

Quant(um) questions

The Netherlands is home to one of the world’s leading technology research centres

on quantum computing. Amid rumours Renaissance Technologies* is hiring from just such departments, Automated Trader decided to check in and see where the technology is at and what it implies for markets.

For those who don’t know, quantum computing is on the path of gaining huge advantages in speed over conventional computers, achieved by carrying out massive parallel computations simultaneously.

It has significant implications for the global economy, particularly for industries coping with computational bulk in an era of big data in sectors such as financial markets, cyber security, and database management, for example.

And figuring out exactly which problems quantum algorithms are going to be able to solve is a job for Harry Buhrman, group leader for Algorithms and Complexity at the Centre for Mathematics and Computer Science in the University of Amsterdam.

Quantum algorithms are especially well suited for calculating factors for big numbers. What used to take tens of thousands of years now takes minutes. Meanwhile, the world’s encryption technology relies on such numbers taking too much time to hack into using brute force tactics.

Quantum computing has potential applications for exactly those types of problems for which there are no known fast algorithms, meaning that solving them would take exponential time. But which problems those are is still a research field in development.

To explain, Buhrman uses an example of

“The leap in mind that you have to take is to think of these superpositions as computations of your computer. If your computer uses 50 qubits, then potentially it can do 2^{50} different computations all at the same time.”

Harry Buhrman, CWI, University of Amsterdam

finding routes to get places between cities. Calculating the shortest distance between two points is easy, but calculating the longest route takes longer than the age of the universe for relatively small instances.

“There are two ways in speeding up problems. One is buying a faster computer and the other is by coming up with smarter algorithms,” Buhrman said.

And just buying more computer power doesn’t exactly solve the issue for problems that take the age of the universe to solve, if you just cut the runtime in half.

Enter quantum computing

At the great risk of oversimplifying, quantum computers could be put to work because of concepts known as superposition and interference.

Superposition is demonstrated in ‘Schrödinger’s cat’, which is a concrete illustration of the theory that a particle can be in two states at the same time. In the cat’s



Man and Machine, Marinus Johannes Hack, c. 1913
Sandstone, h 120cm

This statue stood at the entrance of the Amsterdam office of a company that exported machines to Dutch businesses in the former Dutch East Indies. The Javanese man, nude and sitting cross-legged, symbolises the colony. The modern diesel engine in his lap alludes to the company’s trading activities, as well as to the progress that the Netherlands hoped to bring to Indonesia.

Source: Rijksmuseum



3 questions for Optiver's corporate affairs manager, Willem Sprenkeler

How would you describe the Netherlands' trading environment for electronic market makers?

I think in general the trading environment in the Netherlands is pretty good for firms like Optiver. From a trading point of view the physical location is not that important anymore these days, but the Netherlands has a good IT infrastructure and an attractive business climate and Amsterdam is a pleasant and affordable city for our international workforce to work and live.

Furthermore we have a regulator, the AFM, that is quite knowledgeable when it comes to the automated trading industry in general and the activities of market makers in particular and really tries to take a data-driven approach when it comes to the topic of regulating high frequency trading.

Why do you think firms like yours have flourished there before branching out globally?

Amsterdam has a long history of exchange trading that dates back to the 17th century. And in 1978 one of the first option exchanges in the world was launched in Amsterdam, and from then on specialised derivatives trading firms started to emerge in Amsterdam.

Some of these firms were early adopters of technological means to improve the pricing of options and they soon realised that the developments in technology were likely to alter the business models of securities trading, and not just in the Netherlands. This has given some of these firms a competitive advantage that they could successfully leverage on by entering new markets, both geographically and in terms of products traded.

How do you expect the future to unfold? Are there any aspects of regulations (MiFID for example) you are particularly in favour of? Opposed?

The future is challenging for market making firms in the EU, due to a host of new regulations. In general I believe that most of the new MiFID II requirements for our industry are sensible, such as the requirements on risk controls for automated trading.

But the fact that all MiFID investment firms are also subject to the requirements of CRD (Capital Requirements Directive) IV creates quite a challenge for a lot of firms. CRD IV was obviously drafted with banks in mind and not firms that for example do not have clients or manage other people's money.

On the one hand MiFID II recognises the importance of liquidity provision and even imposes quoting obligations on market makers, but on the other hand the capital requirements in CRD IV make it very unattractive, if not impossible, for market makers to provide liquidity in certain products. We are concerned that this could force a number of proprietary trading firms to re-consider their EU market making activities, which could have an impact on liquidity and price formation and ultimately not be in the interest of end-investors.

case, alive and dead. In a computer's case, 0 and 1. Instead of bits, quantum computers have qubits, which is a superposition of 0 and 1, and can be in two different states at the same time. Looking at a qubit in superposition will yield a probabilistic outcome of 0 or 1.

Every extra qubit doubles the number of superpositions, or the number of states that your superposition can be in, explained Buhrman.

"The leap in mind that you have to take is to think of these superpositions as computations of your computer. If your computer uses 50 qubits, then potentially it can do 2^{50} different computations all at the same time," Buhrman said. "You can do more computations than we have molecules in the universe on 300 qubits."

The catch is that as soon as you observe a quantum state, it collapses into one computation. And that's where interference kicks in.

"If you have a good quantum algorithm, then depending on the problem you are solving, sometimes you can arrange it in such a

way that you use interference to see the computation that you are interested in. You amplify the ones that you want to see, and you let the ones that you don't care about cancel each other out."

So how do you know which outcomes you want?

"That is the person who designs the algorithm. It is very complicated and we really don't understand very well what you can and cannot do," he said. "What I can tell you is that for certain problems the community has found algorithms that seem to be much more efficient, much faster than any classical algorithm."

Going back to the example of optimal routes via cities, could the same problem be repurposed for the financial markets? Say, finding the most optimal route across global trading venues given a desired asset class and trading parameters?

Maybe, said Buhrman, maybe not.

**A spokesperson for Renaissance Technologies did not reply to questions by editorial deadline. ■*

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