Welcome to the machine?

Executive summary

- The European financial market needs volatility to provide margin, yet algorithmic traders, who have increased significantly in numbers over recent years, are undermining this. By taking some of the risk out of the market, are they slowly killing it? Could this have consequences for the stability of economic infrastructure?

Mankind versus machine has featured in many a novel and blockbuster film, often on the premise that too much dependence on technology – whether computing, automation or artificial intelligence – can have unforeseen and civilisation-shattering outcomes. A popular twist in the plot is that what starts out as a beneficial development runs amok, threatening the very survival of well-ordered, civilised society.

In reality, this scenario is extreme but perhaps society isn't as safe as we think it is. A stable economic infrastructure underpins the relatively secure and affluent life enjoyed by Europeans, at the heart of which are thousands of organisations whose business and trading operations drive the economy. Treasurers play a key role in this process, contributing to corporate performance through astute financial management, aided by sophisticated investment strategies and systems – and balancing risk with reward in the face of increasingly slim investment returns.

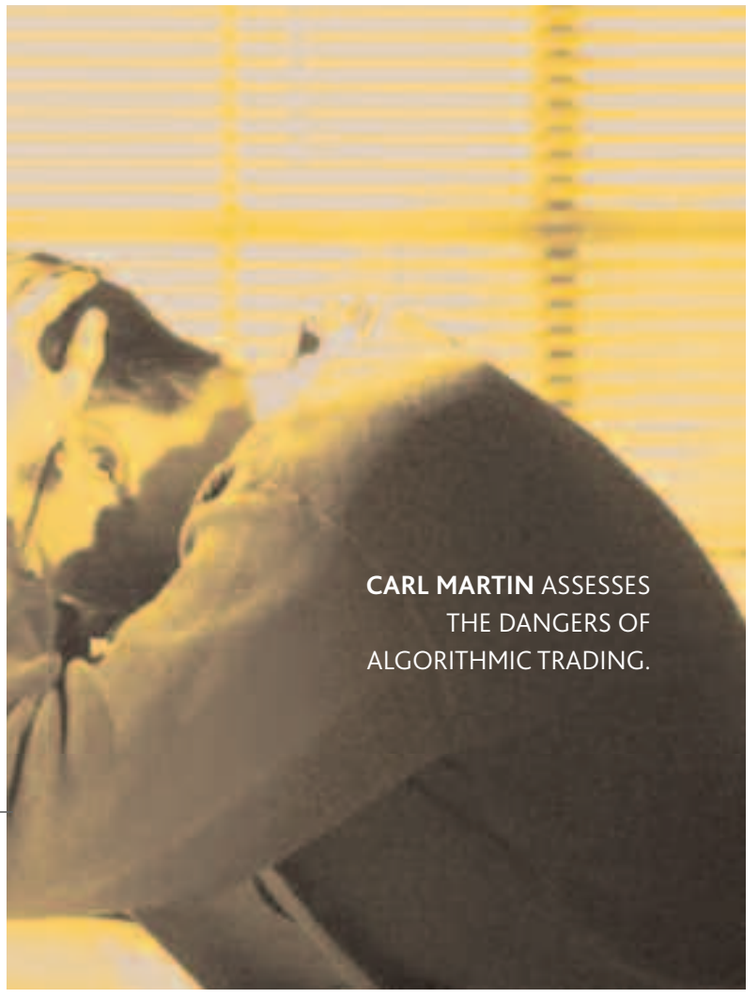
Here, electronic trading is having a growing impact on the way in which the European banking sector works in conjunction with the treasury function. Much new technology is highly beneficial when applied to traditional manual processes, but there is an increasing view that where buying and selling becomes fully automated and operates without human intervention, an essential element of risk, vital to allowing markets to flourish, is taken away.

Uninhibited algorithmic trading is one such example. By being able to search out variance in the market and execute trades automatically, some commentators say algorithmic trading could supplant the human trader. 'Algo' traders don't make mistakes, don't take major risks, and are programmed not to sell at a loss.

VOLATILITY IS THE LIFEBLOOD OF FINANCIAL MARKETS All this sounds great, until one thinks about what would happen if everyone used them – the end of risk, an end to volatility, a major decline in employment, and ultimately the end of profitability in the market as we know it. Volatility is the lifeblood of the markets. Without it, a large source of cashflows and profit – grist to the mill for the treasury department – is lost. European financial and service-based economies, which are not rich in natural resources, are particularly vulnerable in this regard.

Of course, rules-based trading isn't a new idea. Back in the 1970s, charts were used to track trends, monitoring share performance and price movements to predict the best time to buy or sell. Since then, ever more affordable computing power has increased the scope, speed and application of advanced mathematical models for making transaction decisions in financial markets, and they have evolved into today's algorithmic systems. Coupled with straight-through processing (STP), transaction completion can be very fast indeed – a matter of milliseconds – providing profit-generating opportunities on the smallest of spreads.

Now, many price makers use sophisticated pricing engines to offer prices to the markets. These systems already contain algorithms that



CARL MARTIN ASSESSES THE DANGERS OF ALGORITHMIC TRADING.

BETWEEN 19 AND 23 OCTOBER, THE NEW YORK STOCK EXCHANGE PLUMMETED BY 33%, THE LONDON STOCK EXCHANGE FTSE 100 FELL BY 25%, THE EUROPEAN INDEX BY 17%, AND TOKYO BY 12%. MANY OF THESE LOSSES WERE CAUSED BY ALGORITHMIC TRADING.

automatically adjust the prices based on market conditions, customer ratings, and the positions held by the price makers. On the other side of the fence, the price takers are employing algorithmic trading techniques. Both these technologies are being developed at a frightening rate, and show little sign of slowing down. So what happens when the ultimate price engine meets the ultimate algorithmic trader? Like a finely matched game of chess between two computers, could it all end in stalemate?

PANIC MEASURES Historically, spreads and margins have diminished as market volatility has eroded. In fact, electronic trading has even brought markets to a halt. This normally happens when a market becomes fast and starts to gap up or gap down, with panic measures kicking in, bringing a halt to trading, with the result that liquidity dries up in the process.

This was the case during Black Monday, 19 October 1987, and its aftermath, when world bourses and stock exchanges were repeatedly closed down for periods due to electronic trading, trading limit down within a predefined trading range. Trading remained thin, and markets reopened again after a new trading range limit was set. This resulted in gapping in market prices – causing the market to spiral out of control – and leading to panic. With stops being triggered and positions closed out, the market lacked confidence for any speculative players to get involved and most sat on their hands. This continued for several days after the initial knee-jerk reaction, during which the US market lost almost one-quarter of its value in one trading session.

Readers may recall that Black Monday was sparked by the announcement of worse-than-expected US trade figures and the response by US Secretary of the Treasury, James Baker, who indicated that the sliding US dollar needed to fall further. This caused worldwide panic as fears of the likely impact of a US recession were taken on board by the major industrialised countries.

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DEATH BY A THOUSAND CUTS Broadly speaking, market crashes come in two main flavours. The first – and less harmful type – is the sudden onset of panic, an often violent reaction to an event or trend that feels nasty at the time but tends to be shortlived, coupled with system-generated trading and stops. Once the situation is thought through or resolved, the market calms down and returns to normality – until something else sparks off another bout of market hysteria. With the benefit of hindsight, these crashes are soothingly called 'market corrections'.

The much more dangerous type is the prolonged depression of a bear market where shares may rarely fall spectacularly and may even give occasional signs of rallying but their value is bled away, little by little. Shares die the death of 1,000 cuts, suffering agonising losses over the course of months or even years. Measured against the mightiest of these, the 1987 share slump may not look that dramatic.

I DON'T LIKE MONDAYS – OR WEDNESDAYS Ironically, the Black Monday collapse – by far the biggest one-day stock market fall in history – was arguably the least justified market crash ever. On the next trading day, the Dow rose by more than 100 points – its biggest ever one-day gain up to that time – and just over a year later, had recovered all of its lost ground.

Similar panic – exacerbated by system-generated selling which resulted in gapping foreign exchange and money markets – was apparent five years later on 16 September 1992 when sterling fell out of bed. The UK government raised interest rates by 50 percentage points in one day – from 10% initially, to 12%, then up to 15%, forcing the pound out of the European Exchange Rate Mechanism

(ERM) before cutting down to 12% the very next day. The ERM was a system for tying sterling's value to that of other European currencies.

Black Wednesday, as 16 September 1992 came to be known, provided one of the most memorable failures of post-war British economic policy. It was the defining failure of John Major's government, offered a huge boost to Euro-scepticism, and made currency traders like George Soros – one of the pathfinders for both programme buying and selling, with his influencing methods – very wealthy. It also tested the mettle of corporate treasurers.

MIFID BOOST FOR ALGO TRADING Some commentators believe that algorithmic trading will be boosted further by the move towards transparency of costs and unbundling of research and execution services, especially in Europe through the Markets and Financial Instruments Directive (MiFID) expected to come into force in November 2007. The argument is that in an unbundled world, using execution-only services can help to reduce transaction costs with the knock-on effect of increasing the take-up of algorithmic trading, direct market access (DMA) and trading analytics in the drive for better performance.

Organisations will have to prove whether they provide best execution on deals, measured against price, venue, cost and speed. This means reporting information at every step throughout the process – something for which algorithmic trading technology is well suited. The question is whether it is wise to funnel even greater volumes of transactions through algorithmic platforms.

THE GREAT STALL OF CHINA The biggest long-term question in the foreign exchange market at the moment is what will happen to China and its currency, the renminbi. The reluctance of the Chinese government to let the renminbi float on the foreign exchange markets is a major distortion within the global economy. Among many other consequences, it underpins China's ability to produce goods far cheaper than would be the case if it allowed its currency to float. This has led to economic embargos by the US, and to a lesser extent Europe, to try to force the currency into line and prevent China and its exporters becoming cash-rich, with hard currency.

However, the writing is on the wall for China. At some stage in the future the economic cycle in China will slow down, as it drops its guard, allowing the markets to play with the currency. Electronic system trading, coupled with Chinese workers demanding salary increases will raise the prices of Chinese-manufactured goods, while the upward cost of raw materials and the unknown impact of foreign exchange forces will make their mark.

BAD NEWS TRAVELS FAST Thanks to the internet and the explosive growth of communications bad news is received instantly, the impact of which can escalate rapidly through 24-hour electronic trading – as one bourse's business day closes, another opens. The domino effect rapidly affects all interlinked and interdependent financial systems.

It sounds like the plot for the next sci-fi novel, but leaving price engines to slug it out with algorithmic traders has the potential to do serious harm to any advanced economy, which in turn could lead to social unrest and political instability. With institutional profit margins driving personal greed, such events in Europe could have serious consequences, on economies and people's wealth. It could trigger wide-scale job losses, world recession, and ultimately, scenes of civil unrest and lawlessness such as those in New Orleans following Hurricane Katrina but on a bigger global scale. Sadly, society wears only a thin veneer of civilisation that soon breaks down when it becomes every man for himself.

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Fortunately, although algo trading will continue to play a significant role in financial markets – and corporate treasurers will undoubtedly take advantage of the immediate window of opportunity that algo trading currently provides – it is unlikely that it will be allowed to run riot.

We can be fairly confident that the regulators will step in to redress the balance. Also, the banks are wise to the dangers of market conditioning and have the algorithmic systems in their sights in the form of their own 'anti-algo' tools that spot and react to situations. Received wisdom is that machines will not replace human traders. Even the best algorithms and the most powerful computers in the world can't replicate hunches and intuition. And, as in the best end of scene film climax, the human can always yank out the power plug.

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