High-frequency trading

1. What is high-frequency trading?

Trading on stock exchanges and other markets has changed to an extreme degree in recent years. It takes place almost entirely electronically – more and more through computer programs that complete automated orders on the basis of specific rules (algorithms). One variant of this type of trading is high-frequency trading.

High-frequency trading is not a specific term. It encompasses various trading techniques that have a special component in addition to the overall speed of trade. This includes, for example, an extremely rapid buying and selling of securities measured on available assets or the extremely rapid configuration and cancellation of trade offers. Through the latter, market signals can be detected and then further exploited by traders.

Some of this trading takes place in the range of millions of a second (nanoseconds). In order to achieve this speed, high-frequency traders link their computers as closely as possible to the stock exchange.

High-frequency trading is particularly active in major markets, i.e. stock and bond markets. The U.S. stock market allegedly included up to 78% high-frequency trading in 2009. But the practice is said to have reached a level of up to 60% on the German stock exchange as well.

Less well-known is the fact that commodity futures markets are increasingly being indexed. The firm TABB estimated that in 2011, high-frequency trading accounted for one-third of the total volume of the off-market U.S. energy trade. The President of the U.S. commodity futures exchange ICE estimated the share of "soft commodities" (cocoa, coffee, sugar, etc.) at 10 percent in 2011.

2. What are the problems associated with high-frequency trading?

High-frequency trading has taken on speeds that the human mind can no longer comprehend. Nevertheless, it is still often justified by the argument that faster trade is always better trade. Market liquidity – understood as the ability to continually be able to trade at will – allegedly rises in parallel to the trade speed and volume.

But by the financial crisis at the latest, it became clear that trading volume by no means equals liquidity. Researchers at ETH Zürich wrote in a study from 2012: "We question in particular the argument that HFT provides liquidity and suggest that the welfare gains derived from HFT are minimal and perhaps even largely negative on a long-term investment horizon." Large volumes can dry out very quickly if all traders follow the same course of action. This herd mentality has been driven to a new dimension by high-frequency trading.

Andrew Brooks, Head of U.S. Equity Trading, T. Rowe Price, criticised the speed mania in September 2012 in a U.S. Senate hearing: "This pursuit of speed as a priority is in direct conflict with the pursuit of market integrity as a priority." He reported problems in markets that are dominated by high-frequency trading. In particular, he criticised the practice of placing huge amounts of orders before immediately cancelling them.

Excessive trading volumes and price volatility are coupled with new types of price fluctuations and crashes, particularly in the USA, where this type of trading is most developed. In addition to the "flash crash" on 6 May 2010, when the U.S. stock market suffered an overall crash, various negative events have accumulated in commodity markets. In June 2011, the U.S. gas price fell by 8 percent in 15 seconds; there were also price falls in oil in 2011 and 2012. However, emerging countries are now also affected: in October 2012 the Nifty Index on the Indian stock market fell by 15.5%. All these events are associated with the activities of algorithmic and high-frequency traders.

Due to the complexity of the matter, it is not easy to place the blame squarely on high-frequency trading. However, more and more studies recognise the negative price effect. The Yale researcher Frank Zhang stated in 2010: "Stock prices tend to overreact to fundamental news when high-frequency trading is at a high volume." Researchers at Cornell University wrote in 2012: "High frequency trading may play a dysfunctional role in financial markets. (…) This mispricing is generated by the collective and independent actions of high frequency traders, coordinated via the observation of a common signal." The Zürich-based ETH researchers quoted above come to a similar conclusion: "One one can expect more flash crashes in the future involving additional markets and instruments. The technological race is not expected to provide a stabilisation effect, overall. This is mainly due to the crowding of adaptive strategies that are pro-cyclical."

A March 2012 commodity markets study by two UNCTAD researchers, David Bichetti and Nicholas Maystre, indicated new price patterns emerging through high-frequency trading: "This [result] is consistent with the idea that recent financial innovations on commodity futures exchanges, in particular the high-frequency trading activities and al-

gorithm strategies, have an impact on these correlations."

Moreover, high-frequency traders are also frequently associated with certain abusive trading practices, for example, faking identities or feigning commercial purposes ("spoofing" or "layering").

3. Who benefits from high-frequency trading?

Some feel that high-frequency trading is beneficial to the public, i.e. to traders and investors as well, primarily through the alleged generation of "liquidity". But this abstract view blocks a serious analysis of the extent to which this development is really useful to investors. In an interview in December 2012, Andrew Brooks, already mentioned above, described high-frequency traders as follows: "Their game is to take action with the sole purpose of observing a response, and then they can quickly change their strategy in order to profit from this reaction. In other words, the traders can see the end of a horse race and then place bets on the winning horse." This practice, often called "front running", depends not only on the sophisticated algorithms but also the technical advantages of the high-frequency traders, who link their computers as closely as possible to the stock exchange. The high profits generated from high-frequency trading suggest that this is a group of traders who are enriching themselves at the expense of other market participants.

The stock markets defend high-frequency trading. But they also earn well from the additional trading volume. This results in a conflict of interest, because stock markets are acting against the interest of other traders and investors.

4. How can high-frequency trading be regulated?

Regulators and governments have come to realise that high-frequency trading comes with inherent risks.

Investigations have already been underway in the USA for some time now, but so far no decisive actions have been taken. However, due to the inherent risks of high-frequency trading, so-called "circuit breakers", among other measures, have been put in place on the U.S. exchanges. These stop trade automatically when market prices vary to an extreme level within a very short time.

In Europe, a regulation is being discussed within the framework of the Markets in Financial Instruments Directive (MiFID). To ensure better risk management on the markets, the European Parliament suggested prohibiting privileged access to markets, raising the cost of cancellations and introducing minimum holding periods of half a second for offers. However, another decisive body, the Council of Finance Ministers, has been very cautious on the topic until now. Thus, it is currently unclear whether a measure will be implemented at EU level.

In Germany, a law was adopted in March 2013, but it is quite weak. It does contain some welcome specifications: there should be trading stops in the case of massive price fluctuations on the stock markets, an excessive use of trading systems is to be discriminated against using fees and there should be a limit on the ratio of offers to completed transactions. But there are no minimum holding periods for offers or for positions, no prohibitions on privileged market access and certainly no limitations or bans in place.

Especially minimum holding periods could contribute significantly to a slowing of trade. They would decelerate the market and even help to ensure that traders would be better able to foster liquid markets ("market maker"), thus facilitating their work.

The strong criticism from financial experts and market participants suggests that high-frequency trading should be banned or severely restricted. In the European Parliament, such measures have already been promoted by some parliamentary groups. The harmful risks of high-frequency trading do not have to be proven one hundred percent – instead, those defending the practice must prove the usefulness of this type of trading. Until this happens, it could be prohibited in good conscience.

Since commodity futures markets play an important role in both the economy and society, particularly for developing countries, particular caution should be exercised when allowing high-frequency trading.

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