Algorithmic Trading and Retail Traders' Struggles on the Forex Trading Platform[1]

Teerapong Ketmanee

Faculty of Social Sciences, Chiang Mai University, Chiang Mai, Thailand
Email: teerapong.katemanee@gmail.com

Received: March 15, 2022
Revised: September 8, 2022
Accepted: October 28, 2022

Abstract

This article is the first research work on the sociology of finance in Thailand. It focuses on the life of retail traders in the foreign exchange market (Forex), especially the issue of unequal power interactions between a financial institution's algorithm, and a retail trader. The former is a machine trader with advantages in both amount of capital and trading innovation, and the latter is a human trader who has limited capital, lacks advanced trading technology, and is the lowest player in the Forex market. For this reason, this article is important as it helps to open and expand the knowledge frontiers in the sociology of finance in Thailand. The objective of this article was to study financial capital algorithms on the Forex trading platform that have a negative effect on retail traders' lives. I collected data from relevant documents and online media using the qualitative research method. This method included the use of ethnographic research by participatory observation and interviews with retail traders in Chiang Mai who opened Forex trading accounts with "FX" (pseudonym) brokers, which are Forex brokers that I use as my research unit. I also used Matteo Pasquinelli's concept of "augmented intelligence" (AI) to analyze data to explain how algorithms work on trading platforms because algorithms have the same mechanics as AI, a machine that thinks like a human brain. The research found that algorithmic trading is the primary tool that financial capital uses to capture retail traders' lives in order to accumulate wealth from their losses. Therefore, retail traders' trading data are constantly detected and analyzed by algorithms on the Forex trading platform.

Keywords: algorithmic trading, financial capital, retail trader, Forex trading platform, sociology of finance

[1] This article is part of a PhD thesis entitled, "Life on the Trading Platform: Becoming an Entrepreneurial Machine of Retail Traders in the Foreign Exchange Market," Faculty of Social Sciences, Chiang Mai University.

Introduction

In this new digital environment of trading, algorithmic agents make decisions faster than humans can comprehend…. These algorithms form a complex ecology of highly specialized, highly diverse, and strongly interacting agents, operating at the limit of equilibrium, outside of human control and comprehension (Parisi, 2015: 126).

The preceding statement reflects the significance of algorithmic trading,[2] particularly high-speed algorithms such as high-frequency trading (HFT),[3] which outperform human traders in terms of trading speed and profit efficiency. For this reason, financial institutions at all levels are steering toward trading with algorithms instead of human traders. As a result, the speculative power of algorithmic machines drives the majority of trading volume in the global financial markets that takes place on the electronic trading platform.[4] This is particularly true of the world's most liquid financial markets, like the foreign exchange market (Forex).

In contrast, the retail traders,[5] who are the lowest level of players in the Forex market, have financial constraints and no access to such trading technology. Thus, they are at a competitive disadvantage compared to their trading counterparts, which are financial institutions, and they must face heavy losses. The reason is that algorithmic trading has become an essential tool deployed by financial capital to capture retail traders' lives in order to misappropriate their funds on the Forex trading platforms. Consequently, the wealth of financial institutions emerges in the midst of the financial ruin of retail traders.

For this reason, my research question is: how does a financial institution's algorithm work on a Forex trading platform? The objective

[2] Algorithmic trading is the use of computers and advanced mathematical models to make decisions about the timing, price, and quantity of a market order. Trades can be made without human intervention using information received electronically.

[3] An algorithmic trading strategy that profits from incremental price movements with frequent, small trades executed in milliseconds for very short investment horizons. HFT is a subset of algorithmic trading.

[4] An electronic trading system that automatically matches buy and sell orders at specified prices.

[5] A retail trader is a person who is not a financial institution's professional trader and has an investment account of less than $10 million (Preda, 2017: 53).

of the research is to study the negative effects that algorithmic trading has on retail traders' lives.

Literature Review

Academics in the social sciences have studied the issue of financial markets and traders seriously for the past 10 years, after the subprime crisis. This is evident from the expansion of the social studies of finance (SSF) approach, which is the study of social scientists trying to cross their own academic boundaries into other academic areas, especially economics, finance, and investment, by using perspectives and concepts from the social sciences in research. This approach was also inspired by a group of scholars from science and technology studies (STS), who were among the first social scientists to study science and technology (Preda, 2012).[6]

According to a literature review of research on financial markets and traders, the social studies of finance focus on three main issues. The first issue is the structure of financial markets in the digital age, because at present, the entire structure level of financial markets around the world is interconnected by a computer system on a high-speed Internet network (Preda, 2009; Cetina and Preda, 2012). Therefore, the main actors that come into speculation and drive the price action in the financial markets are financial institutions and professional traders. This is the second issue most social scientists are interested in studying because financial institutions and professional traders are investors with an advantage in both the amount of capital and access to cutting-edge trading technology (Zaloom, 2010; Wansleben, 2013; Beunza, 2019). Moreover, the main tool used by them to speculate is a machine trader, or "algorithmic trading," (automated computerized trading) rather than a human trader.

[6] The group, "science and technology studies" (STS), is an example of early social scientists who attempted to study science and technology using social science perspectives and theories. In the past, most social scientists only studied cultural issues within their own academic boundaries. The cross-disciplinary study of the STS group thus influenced later academics, such as those in the "social studies of finance" (SSF), who are social scientists who cross their academic boundaries to study issues about financial markets and traders, which is the main discipline of economists and business administration scholars.

This is the third issue most social scientists focus on in their studies under the contemporary academic trends of non-humanism and ontological turn[7] (Borch and Lange, 2017; MacKenzie, 2018a; MacKenzie, 2018b; MacKenzie, 2019).

Nevertheless, there have been few studies on the lives of retail traders, who are at the lowest level of players in electronic financial markets, as can be seen in key research by the financial sociologist Alex Preda (2017). This work focuses on the lives of retail traders in the United Kingdom and the United States. It argues that the ultimate goal of retail traders is to achieve "bourgeois freedom," or what people in finance and investment called "financial freedom." However, the majority of retail traders will fail in the financial markets because they don't make trading decisions based on their own free will. Rather, they decide while being mind-manipulated by the "trading leaders" of the brokers. Furthermore, the majority of retail traders' orders are never entered into the market because brokers in reality act as competitors and profit from their clients' losses. From Preda's perspective, then, the retail traders' trading activity is merely "an illusion of competition on the trading screen."

Preda's research, however, neglects to analyze the interactions between retail traders and the financial institutions' algorithms on the trading platform. Currently, algorithmic trading has become a key mechanism employed by financial institutions to capture lives and steal money from retail traders. Therefore, I wish to argue with Preda's research and create a new proposal in the sociology of finance.

Research Methods

The research methods used in this paper are qualitative and ethnographic. I used a sample group of retail traders in Chiang Mai, a total of 10 people who opened a Forex trading account with an "FX" (pseudonym) broker. The majority of them are men between the ages of 20 and 40, who have completed their tertiary education and work as both temporary employees and small business owners, with an average monthly income of 10,000-30,000 baht.

I began collecting data from 2018 to 2021 by gathering relevant evidence from articles, books, research, and online media. In addition, I collected data through interviews and participatory observations as a retail Forex trader, including using Forex trading platforms like MetaTrader4 (MT4), which is a platform for retail traders to use as a field of research.

I analyzed the data by applying the "augmented intelligence" (AI) concept of Matteo Pasquinelli to explain how financial institutions' algorithms work in the same way as an "AI" machine that thinks like a human brain. Nowadays, algorithmic trading is the main tool used by financial institutions to capture lives and steal funds from retail traders on the Forex trading platform.

Research Results

The research findings are divided into four sub-topics: 1) a retail trader in the Forex market; 2) an algorithm on the Forex trading platform; 3) financial capital's algorithm and the struggles of retail traders; 4) theoretical analysis: augmented intelligence (AI) and the life-capture mechanism of financial capital.

A Retail Trader in the Forex Market

The Forex market is a financial derivatives market in the form of over-the-counter (OTC) transactions that do not have an exchange center. Instead, they are traded on electronic platforms and are linked by a global network of central banks. As a result, the Forex market can be open 24 hours a day and is closed on Saturdays and Sundays according to local bank closing times (Wongwitthaya and Wongwitthaya, 2018: 34-35). The Forex market is currently the most liquid financial

[7] The ontological turn is a contemporary methodology and theory that is gaining widespread attention in social science and is often used to study the reality and existence of non-human beings such as machines, animals, plants, spirits, etc. In the past, the epistemological method and the post-structural theory of social scientists have not been able to reasonably explain their existence because they adhere to a humanistic viewpoint that uses humans as the subject of study and reduces non-human beings to mere objects of study.

market in the world, with a daily trading volume reaching $6.6 trillion in 2019 (Bank for International Settlements, 2019: 30).

The structure of the Forex market on electronic platforms can be divided into two levels: 1) the inter-dealer market or internal market, where exchanges take place directly between large financial institutions; and 2) the dealer-customer market or external market where exchanges take place indirectly between smaller financial institutions and retail traders. Furthermore, the Forex market also has a network of over 75 trading platforms, including single-bank platforms (SBP), multi-bank platforms (MBP), and electronic trading platforms (ECN), which are platforms for financial institutions that can implement algorithmic trading (Schrimpf and Sushko, 2019: 40-43).

The main motivation that drives the Forex market's price mechanism is speculation by a large number of traders, with financial institutions grouped as "dealers" or "market makers" to provide liquidity into the market (King, Osler, and Rime, 2011: 9). Large financial institutions, such as regional banks and prime brokers, will provide liquidity to smaller financial institutions, such as hedge funds, local banks, brokers, etc., while small and medium-sized financial institutions will provide liquidity to retail traders (King, Osler, and Rime, 2011: 14-15). As a result, small and medium-sized financial institutions have the status of competitors or "counter parties" with retail traders. Hence, Forex trading is a zero-sum game in which the winning trader's profit is always equal to the losing trader's loss.

Retail traders can speculate in the Forex market by opening an account through brokers or "retail aggregators," which will collect and send retail traders' orders into matching orders with other competitors (King, Osler, and Rime, 2011: 13,17). Therefore, intermediaries like brokers receive a return as a fee from the trading frequency of retail traders (Wongwitthaya and Wongwitthaya, 2018: 68-75).

Since 2000, the development of electronic platforms for retail traders has also become a key factor in allowing retail traders to trade Forex comfortably. Specifically, popular Forex trading platforms like

MetaTrader4 (MT4),[8] where the prices of various "contracts for difference" (CFDs),[9] such as currencies, energy, metals, indices, stocks, and so on, are streamed live on the platform. Moreover, retail traders can also use leverage from brokers to expand the size of their investment. Leveraging for retail traders can be used up to 50 times in the United States, but it can be used over 400 times outside of the United States (Preda, 2017: 50-51). In the case of the "FX" broker used as a case study in this article, leveraging can be used up to 888 times, which allows retail traders with limited funds to make large profits from price differences of CFDs in the Forex market.

For this reason, the advancement of Forex trading innovations has become a critical factor that attracts more Thai retail traders to speculate in the Forex market. Forex trading has thus become a dream career for retail traders that the author used as a sample group. Because Forex trading is a means of making money online that is not constrained by space and time, the traders have complete freedom from a full-time job. They also have the opportunity to get rich quickly with a small amount of funds because the Forex market is the world's most liquid derivatives market and can use leverage multiple times (Ketmanee, 2020a). In addition, retail traders can also learn Forex trading secrets or speculative knowledge for free from the Forex gurus of FX brokers via various channels, such as Forex books, Facebook pages, YouTube channels, online and on-site Forex classes, etc., to apply such knowledge in designing a trading system that has its own uniqueness (Ketmanee, 2020b).

Nevertheless, although retail traders can design a highly efficient trading system, in the end, they will face unavoidable setbacks and losses because their trading behavior on the MT4 platform will be constantly detected and analyzed by the algorithms of financial institutions. I will explain this issue in the section that follows.

[8] MetaTrader4 (MT4) is a platform developed by the Meta Quotes Software Crop company that has been available to retail traders since 2005. MT4 is a software application that can be used on computers, tablets, and smartphones. It can be used on both the Android and iOS operating systems Wongwitthaya and Wongwitthaya, 2018: 130).

[9] CFDs are tax-free financial derivatives that do not have contractual documents and are suitable for short-term speculation (Wongwitthaya and Wongwitthaya, 2018: 22-24).



Figure 1 The Forex trading on Meta Trader4 (MT4) platform
(Photographer: Teerapong Ketmanee)

An Algorithm on the Forex Trading Platform

Currently, the majority of the liquidity in the Forex market is caused not by trading activities between human traders, but rather, it is the result of the speculative power of machine traders like algorithms. Algorithmic trading volume has increased exponentially from 28 percent in 2007 to 68 percent in 2013 (Rime and Schrimpf, 2013: 38-40) because algorithms have trading potential that is superior to that of humans in every way, especially the ability to process massive amounts of data and trade at millisecond speeds (Chaboud, Chiquoine, Hjalmarsson, and Vega, 2009). As a result, various financial institutions, such as banks, fund managers, and hedge funds, among others, are using algorithmic trading instead of human traders to increase trading efficiency and gain an advantage over other competitors in the Forex market. According to 2019 statistics, more than 75 percent of all financial institutions already use algorithms in Forex trading and this number tends to increase continuously on both multi-bank platforms (MBP) and electronic trading platforms (ECN) (Schrimpf and Sushko, 2019: 44-47).

The algorithms on the Forex trading platform can be divided into two main types. The first is regular algorithmic trading, which is

the most frequently used algorithm on the Forex trading platform. These algorithms use computer programs in automated trading and are created by programmers who write code using trading data occurring in the Forex market, such as order book imbalance, momentum, correlations, mean reversion, economic data, and so on, in order to create quantitative trading models that have high mathematical complexity (Bank for International Settlements, 2011: 3).

The second type of algorithm is high-frequency trading (HFT), a high-speed algorithm that can analyze large data sets in the Forex market, and trade multiple currency pairs simultaneously within a fraction of a second. Typically, a regular algorithm takes about 150 milliseconds to send an order to the market. But an HFT will take only 10-30 milliseconds (Bank for International Settlements, 2011: 1-4).

As a result, an HFT must rely on supercomputer computing power, microwave transmission, and locating offices as close to the exchange market's data center, also known as co-location, to reduce the time it takes to place orders in the market. In addition, the majority of trading platforms that provide services to HFT companies are also algorithmically anonymized, or "dark pools" (MacKenzie, 2018a; 2018b; 2019). More than that, the development of the HFT also requires programmers who are experts in mathematics, physics, and advanced computer technology. This is in contrast to the professional traders of financial institutions in the past, who were mostly experts in economics and finance (Borch and Lange, 2017: 15-17).

According to a BIS survey, the average turnover of HFT on the Forex market has increased exponentially from 657 billion in April 2007 to 3.98 trillion in April 2010 (Bank for International Settlements, 2011: 10). Furthermore, statistics from 2013 show that HFT usage in the Forex market has already reached 35 percent (Rime and Schrimpf, 2013: 40). Thus, currently financial institutions on all levels are accelerating their investments and developing their own HFT to compete for market leadership, which has resulted in a significant increase in the number of HFTs. Consequently, financial institutions that use HFT are often referred to as predators because they can monitor trading orders and

predict their competitors' trading behavior within milliseconds (Bank for International Settlements, 2011: 24-25).

Retail traders with limited funds and no access to such advanced trading technologies are like prey being stalked on the trading platform and hunted by the high-speed algorithms of financial institutions. Consequently, the majority of retail traders lose heavily and become failures in the Forex market. I will explain this issue in the section that follows.

Financial Capital Algorithms and the Struggle of Retail Traders

Financial institution algorithms have trading efficiency superior to that of retail traders in all dimensions, including sophisticated data processing, price forecasting accuracy, etc. Thus, most retail traders are unable to generate consistent profits and must face heavy losses (Malinova, Park, and Riordan, 2018).

Retail traders are constantly monitored, detected, and analyzed for their trading behavior by algorithms on the MT4 platform. This is due to the fact that financial institutions have direct access to retail traders' trading data by purchasing it from trading platform owners to improve the trading performance of their own algorithms (Bank for International Settlements, 2011: 5-6). Hence, financial institutions' algorithms are no different from those of predators seeking wealth in the midst of retail traders' financial ruin. Most retail traders struggle, as they have to compete with superior competitors like algorithms.

This is evident in HFT's "arbitrage" trading strategy, which makes profits from a small difference between bid and ask prices from the frequency of large orders. For example, HFT can trade three currency pairs at once: EUR/USD, USD/JPY, and EUR/JPY, all within a few milliseconds (Bank for International Settlements, 2011: 5). HFT's trading speed has thus resulted in most retail traders always paying higher trading costs than they should. HFT takes advantage of execution speed by always cutting ahead and overtaking the retail trader's order queue by a practice known as "front-running." Retail traders with short-term trading styles like scalping and day-trading frequently have

winning trades, but the profit is quite low compared to the loss. As a result, the statistical sum of the long term in their accounts is negative.

In an interview with Counter Trader (pseudonym), who is a short-term speculator, I learned that every time he placed an order in the market, he failed to get the price that he wanted. Whether he sent a market order or a pending order, he always received a higher price than usual. For example, if he placed an order to buy gold (XAU/USD) with a buy-stop order at $1800.00 and added the spread of around 40 points, he should have bought it at $1800.40. However, he was forced to buy it at a price higher than the anticipated $1800.50-1801.00, which resulted in his having to pay a higher price and having to try to sell it at a higher price because the algorithm was sending orders overtaking his orders. Consequently, his profit potential was reduced because he had no way of knowing whether the price would rise or fall in the next few minutes. If the price were to fluctuate or fall slightly, he would have had to cut his losses immediately. He explained,

> When we trade, it's like someone is always watching us. It is as if the market knows which way we are going to trade. Whether we will buy or sell, the price will always run against our orders. But before I knew that we were fighting algorithms, I had lost all of my money and had cleared the port several times already. It's like when we use Facebook and YouTube. What clips do we like to watch and which songs do we like to hear? They will show up to sell ads for us. But in Forex trading, those algorithms can predict how we will open orders, and then trade contrary to us (Counter Trader [Pseudonym], 2021).

In addition, financial institutions' algorithms are also capable of processing complex events based on trading data from currency pair price movements, such as momentum, correlation, economic data releases, and so on (Bank for International Settlements, 2011: 5).

An example is the "momentum detection" trading strategy, which uses algorithms to detect a conflict between the price movement and the indicator's momentum, because this is a significant signal

indicating a future market trend reversal, also known as a "divergence signal." When this signal has been detected, algorithms try to add orders to the market in order to entice and encourage retail traders to engage in more speculation. But after that, the algorithm will send orders in the opposite direction, causing the price to reverse abruptly, and make a profit from their losses. Therefore, retail traders who are mid-term speculators (swing traders) and long-term speculators (position traders) often trade contrary to the main market trend and predict the wrong price direction. As a result, the algorithm can analyze and predict the trading behavior of most retail traders.

Another case is that of Gold Hunter (pseudonym). In an interview he revealed that he was aware of the existence of algorithms and tried to avoid competition in terms of speed with HFT by changing his trading style from short-term speculator (day trader) to medium-term speculator (swing trader). However, he still can't escape facing the algorithm because algorithms can sense the trading behavior of most retail traders on the platform by detecting momentum. Gold Hunter was surprised, despite his careful analysis of the charts which led him to think that the price would continue to move in the main trend. But shortly after he put an order into the market, the price would reverse and there would be always a change in trend. Or even when he believed the price was likely to reverse and there would be a trend change, after he made a trade, the price would continue to move along the main trend. As a result, he often guesses the wrong direction and always trades against the main market trend. He explained,

> I have changed my trading style many times. But nowadays, the average win rate of my system is still less than 60 percent. Now I try to focus trading on the swing point of the price in a one-hour time frame and use the Bollinger Band[10] indicator to help identify the trend. But I still trade the wrong way, and even now I don't know how to find a way to trade accurately. I still didn't know how to beat algorithms, and I've lost a lot of my savings (Gold Hunter [Pseudonym], 2021).

[10] The Bollinger Band is the name of a type of indicator that is used in Forex trading.

Moreover, financial institution algorithms can also process data from reports on key economic figures that directly affect each country's currency, otherwise known as News Feed Arbitrage. Such trading strategies can analyze highly complex data and are capable of quickly adapting to changing trading styles. As a result, the economic figures released don't always correspond to currency pair price movements because price changes that occur during economic news announcements are influenced by algorithms' speculative power. Therefore, retail traders cannot use economic figures to analyze price trends in a straightforward way.

In an interview, News Gambler (pseudonym), told me that he often uses the U.S. Non-Farm Payrolls news announcement to trade the USD/JYP currency pair. He will analyze the non-farm figures, both previous and forecast figures, as well as other economic figures for the United States and Japan, in order to predict how the price direction of the USD/JYP currency pair will move after the release of the non-farm figures. However, no matter how many variables he uses in his analysis, his predictions will fluctuate between both right and wrong. The reason is that while the non-farm figure is announced, the price movements in all currencies paired with dollars will be in full swing and be so volatile that it is impossible to predict the direction precisely as HFT is speculating with huge amounts of capital. He explained,

> I don't think that non-farm news can be used for reliable analysis. Perhaps the numbers came out better than expected, but the dollar was weakening instead of rising. Maybe the numbers announced are really bad, but the dollar is also strong. Or maybe the numbers came out the same as last time, but the graph still runs very strongly even though it should be a sideways trend. It is very rare that the price will run in the numbers that have been announced. I'm very confused about what conditions we need to analyze. I try to take all the variables into account, but my analysis is still wrong and sometimes I get very discouraged. I've been trading Forex for a year, but still can't find a way to make a profit that is both accurate and stable (News Gambler [Pseudonym], 2021).

In short, the millisecond speeds and sophisticated data processing of algorithmic trading are the technological advantages that financial institutions use to detect and analyze retail traders' trading behavior in order to create wealth by misappropriating their money on the MT4 platform.

From my experience following and interviewing ten retail traders over the last three years, I've discovered that most of them are unable to make consistent profits and have lost hundreds of thousands of baht each. Only one person, Trader's Way [Pseudonym], was able to adapt and survive the algorithms' ruthlessness so that he could make a profit of hundreds of thousands of baht per month, finally be free from regular work, and have wealth in his life (Trader's Way [Pseudonym], 2021). He was successful because he could assemble the ontological subjectivity of being an entrepreneurial machine[11] in order to connect his subjectivity with the Forex machine network.

This ontological subjectivity assembly can be done by studying in-depth speculative knowledge, such as charts, indicators, statistics, and other data. After that, retail traders must use this knowledge to design their own trading system consisting of at least two different types, which must be continually improved because the price movement in the Forex market fluctuates greatly and has multiple trends. I call this attribute mechanical thinking.

In addition, retail traders have to adhere strictly to the rules of their trading system without emotion in order to be able to make consistent profits in the long run. If a retail trader breaks the trading rules and trades with a variety of emotions such as greed, fear, anger, hesitation, etc., the statistical average of the tested net profit can be transformed into a loss. Therefore, retail traders must have strong confidence, which I refer to as "entrepreneurial spirit" in the profitability of their trading system. The abstract process that emerges within each retail trader's body and brain is also what I call an "entrepreneurial machine subjectivity," which can reflect the machine attribute within human subjectivity. However, the vast majority of retail traders are unable to assemble their new ontological subjectivity and, therefore, must face severe losses that are a direct result of facing superior competitors like financial institutions' algorithms.

Therefore, I will analyze the working mechanism of the algorithm on the Forex trading platform by applying the augmented intelligence (AI) concept of Matteo Pasquinelli.

[11] I will not discuss this issue in detail because it is outside the scope of this article. But this issue is discussed in another of my articles, titled "Thai Retail Trader: Trading and Struggling on the Forex Trading Platform."

Theoretical Analysis: Augmented Intelligence and the Life Capture Mechanism of Financial Capital

In this section, I will apply the augmented intelligence (AI) concept of Autonomia Marxist thinkers like Matteo Pasquinelli to analyze the mechanisms of algorithmic trading, which has become an essential tool used by financial capital to capture the lives of retail traders on the trading platform. I use the phrase "capture the lives" because "life capture" is a term used in the augmented intelligence (AI) concept of Pasquinelli that reflects the lives of retail traders on a trading platform that is completely manipulated by the algorithms.

Pasquinelli explains that since the late 1990s onward, financial mechanisms and digital technology have become key tools of cognitive capitalism to exploit and capture value in society. Hence, the main trend currently in capital accumulation is the use of artificial intelligence (AI) to optimize the production process, communication, and functioning of the economy. Pasquinelli thus proposes that we need to understand capitalism in the digital era through the mechanics of AI's workings, which he calls augmented intelligence (Kitirianglap, 2018: 222-223).

AI machines will work similarly to the human brain, which constantly receives and processes information. AI is thus a cybernetic-style "info-machine" that necessitates advanced computing technology in order to convert data into high-resolution statistics (Kitirianglap, 2018: 223-224). AI operates on the basis of a digital language that must be encoded and decoded with binary digits of 0 and 1, a universal

language used to program and develop computer software. This digital language must also have an algorithm that serves as a data management and processing system for each piece of software (Pasquinelli, 2015a: 62).

Therefore, algorithms are like mechanical brains or machine logic, that can process information through their own specialized language system. A large amount of data is thus a key factor in developing algorithms to accurately predict future trends, which Pasquinelli calls metadata, which is a reference for organizing other data sets in another layer (Kitirianglap, 2018: 227).

Thus, metadata acts as a value measure for the new set of data that is brought into the system and iterates through a feedback loop process to help the algorithm perform better when dealing with new data sets that are still unknown. Capitalism thus uses algorithms as a mechanism for capturing and penetrating every human dataset, whether it be genetic code, consumer tastes, opinions, etc., in order to bring various data sets back together to process and measure the value of each human being in terms of layers[12] (Pasquinelli, 2015a: 63-64).

Pasquinelli thus proposed that capital can think too,[13] because capital can integrate itself with AI machines by relying on the advancement of digital technologies like computer systems and the Internet networks (Pasquinelli, 2015b: 1-10). However, AI machine thinking does not occur automatically because algorithms must be designed and developed by humans. Thus, an AI thought system will think via logic that has already been programmed, and these programs will also be constantly developed to improve the efficiency of the algorithms (Pasquinelli, 2015c).

[12] The "value measurement" on digital platforms does not measure the value of each individual. Rather, it measures the value of user groups by stratifying and categorizing based on the information generated on the digital platform, by each user, such as general users, entrepreneurs, content creators, gamers, etc.

[13] "Capital thinks, too," in Pasquinelli's definition, means that digital capitalism is able to think and do so at the same abstract level as the human brain by developing AI-powered machines. For example, the app algorithms of Uber are an operating system used to control and command drivers who can learn and adjust their working styles by themselves.

If we apply Pasquinelli's concept of augmented intelligence to analyze the mechanism of algorithmic trading on the Forex platform, we will find that the reference source that algorithms use to learn and develop their intelligence comes from the trading data set. This takes place on various platforms in the Forex market, such as financial institutions' trading data on single-bank platforms (SBP), multi-bank platforms (MBP), and electronic trading platforms (ECN), as well as retail traders' trading data that takes place on the MetaTrader4 (MT4) platform.

The trading data set that occurs on different platforms is thus the metadata of the Forex market, which is a great source of raw material that algorithms must use to develop their intelligence. As a result, financial institutions that use algorithms in Forex trading try to access as much metadata as possible by paying for a new trading data set from the trading platform owners (Menkhoff, Sarno, Schmeling, and Schrimpf, 2016). Without the metadata that is being constantly updated, the trading performance of the algorithm will also freeze and fail to develop.

Thus, algorithms have become a key mechanism used by financial capital to capture the lives or stalk the trading behavior of retail traders at every move on the trading platform. The competitors or counter parties that have to match orders with retail traders are small and medium-sized financial institutions, such as banks, hedge funds, institutional investors, brokers, etc., that use algorithms, both regular and HFT, as tools for stealing money from retail traders. Retail traders are thus constantly detecting and analyzing trading data on the MT4 platform.

Therefore, the retail trader's trading data, in the form of metadata, has become a valuable resource for financial capital to improve the trading efficiency of their algorithms, which allows them to profit from the retail trader's losses in another layer without their being aware of it. As a result, retail traders are at a significant disadvantage compared to their competitors in the market because they have limited funds and lack access to cutting-edge trading technologies such as AI. Thus, most retail traders must face Forex trading failures because they are unable to escape and survive under the watchful eye of algorithms.

Discussion and Conclusion

In the following section, I want to create a new argument on the issue of "financial institutions' algorithms and retail traders' life capture mechanisms," which is a study result that is analyzed by using Matteo Pasquinelli's conceptual augmented intelligence (AI). I aim to have an academic debate with the research of Alex Preda (2017), especially on the issue of "rituals and illusions of the trading screen."

Preda proposes that in the professional traders' world, orders are entered into various financial markets through intermediaries like dealers to match orders with opposite counterparties. But in the case of retail traders who trade contracts for difference (CFDs) on the Forex market, their orders were never executed in the market because the broker was attempting to compete with them. The broker's income is thus derived not from order placement fees, or spreads and commissions, but rather from the profit made from retail traders' losses. Preda considers such trading activities to be no different from gambling in a broker-owned casino, and thus retail traders are like gamblers (Preda, 2017: 120-121).

Thus, Preda views retail traders' trading as merely "the illusion of competition." But to make trading on the screen look more realistic in the eyes of retail traders, brokers need to create "rituals on the screen" to convince retail traders that they are competing with other traders in the real market. They do this by relying on the masters, who are famous traders with trading expertise, to deliver their knowledge and trading signals to retail traders live on the broker's platform (Preda, 2017: 132-135).

The master is thus like a leader who displays and reproduces trading rituals across the screen, with retail traders as followers devotees who follow the leader's trading orders. Thus, the master has become a tool used by brokers to manipulate the mindset of retail traders to believe that if they follow the advice of the master, they will be able to make profits just like those of leading traders. As a result, most retail traders believe that they are actually competing with other traders in the financial

markets, although in fact, they are competing with their own brokers. Therefore, Preda concludes that this process is the creation of "the illusions of competition on the trading screen" by the broker (Preda, 2017: 143-144).

I do not agree with Preda's proposal on some points. In my view, although some brokers will try to compete with retail traders, also known as "dealing desk" (DD) brokers, as Preda proposes, in fact, there are also other retail traders who can actually enter the market through a non-dealing desk (NDD) broker platform. The NDD broker will act as a "retail aggregator" (RA) to send orders of retail traders into the Forex market to match orders with "liquidity providers" (LP), which are mostly financial institutions that use algorithms to trade both regular and HFT.

Thus, Preda's explanation that retail traders' trading is just the illusion of competition on the broker's screen is too general to claim that most retail traders have never really competed in the Forex market. Such a description ignores the fact that other retail traders can also enter the Forex market through the platform of an NDD broker, and therefore, they have the opposite competitors, being financial institutions. In the case of the retail traders who opened an account with an FX (pseudonym) broker that I used as a sample group, they were a group of retail traders who were actually able to trade in the Forex market.

When Preda claims that most of the retail traders' trading activities never actually take place in the Forex market, he neglects to explain the issue of algorithmic trading, which is an important tool that most financial institutions use to accumulate wealth amid the financial ruin of retail traders, as I explained earlier.

In conclusion, I would like to dispute Preda's research and create a new argument in financial sociology: that the trading activity of retail traders is not just the illusion of competition taking place on the broker's screen. In fact, there are still other retail traders facing off against competitors that are AI machine traders, like algorithms. Therefore, algorithmic trading is a key mechanism used by financial capital to capture life and misappropriate funds from retail traders on the Forex

trading platform, which is a major reason most retail traders face heavy losses and thus fail in Forex trading.

Acknowledgements

This project is funded by the National Research Council of Thailand (NRCT): (NRCT5-RGJ63004-074).

References

Beunza, D. (2019). **Taking the floor: Models, morals and management in a Wall Street trading room**. Princeton, NJ: Princeton University Press.

Borch, C. and Lange, A. C. (2017). High-frequency trader subjectivity: Emotional attachment and discipline in an era of algorithms. **Socio-Economic Review, 15**(2), 283-306.

Cetina, K. K. and Preda, A. (2012). **The Oxford handbook of the sociology of finance**. Oxford: Oxford University Press.

Chaboud, A., Chiquoine, B., Hjalmarsson, E., and Vega, C. (2013). Rise of the machines: Algorithmic trading in the Foreign Exchange Market. **Journal of Finance, 69,** 2045-2084.

Kitirianglap, K. (2018). ***Conatu: Chiwit lae amnat chuapchum chiwit nai rabop thunniyom haeng satawat thi yisipet.*** (In Thai) [Conatus: Life and power control life in 21st century capitalism]. Bangkok: Illuminations Editions Press.

King, M. R., Osler, C. L., and Rime, D. (2011). Foreign exchange market structure, players and evolution. **Norges Bank Working Paper,** 10.

MacKenzie, D. (2018a). Material signals: A historical sociology of high-frequency trading. **American Journal of Sociology, 123**(6), 1635-83.

MacKenzie, D. (2018b). Making, taking and the material political economy of algorithmic trading. **Economy and Society, 47**(4): 501-523.

MacKenzie, D. (2019). Market devices and structural dependency: The origins and development of dark pools. **Finance and Society, 5**(1), 1-19.

Parisi, L. (2015). Instrumental reason, algorithmic capitalism, and the incomputable. In Pasquinelli, Matteo (Ed.). **Alleys of your mind: Augmented intelligence and its trauma.** (pp. 125-131). Luneburg, Germany: Meson Press.

Pasquinelli, M. (2015a). Italian Operasismo and the Information Machine. **Theory, Culture and Society, 32**(3), 49-68.

Pasquinelli, M. (2015b). **Capital Thinks Too: The Idea of the common in the Age of Machine Intelligence**. Open.

Pasquinelli, M. (2015c). **Alleys of your Mind: Augmented Intelligence and Its Trauma**. Luneburg, Germany: Meson Press.

Preda, A. (2009). **Framing finance: The boundaries of markets and modern capitalism.** Chicago, IL: University of Chicago Press.

Preda, A. (2017). **Noise: Living and trading in electronic finance.** Chicago, IL: University of Chicago Press.

Ketmanee, T. (2020a). *Forex trader kanklaypen phuprakopkan bon platform kantrade khong khonhnumsaw tai rabop tunniyom khwamrapru.* (In Thai) [Forex Trader: Becoming an entrepreneur on the trading platform of young people under cognitive capitalism]. In **Proceedings of the First National Conference on Humanities and Social Sciences: Academic Liberal Arts.** (pp. 90-107). Chiang Mai: Mae Jo University.

Ketmanee, T. (2020b). *Forex guru kapkan prakopsang khwampen tuaton khong trader rai yoi.* (In Thai) [Forex guru and the production of subjectivity of retail trader], In W. Prapong (Ed.). ***Khwam mai pen ying khwam mai pen chai khwam mai pen khon.*** (In Thai) [The (not) feminine, (not) masculine, (not) human]. (pp. 173-320). Chiang Mai: Department of Sociology and Anthropology Faculty of Social Sciences, Chiang Mai University.

Wansleben, L. (2013). **Cultures of expertise in global currency markets**. Oxon: Routledge.

Wongwitthaya, Y. and Wongwitthaya, K. (2018). ***Songkhram forex nueng.*** (In Thai) [Forex War 1]. Bangkok: Great Idea.

Zaloom, C. (2010). **Out of the pits: Traders and technology from Chicago to London.** Chicago, IL: University of Chicago Press.

Websites

Bank for International Settlements. (2011). **High-frequency trading in the foreign exchange market.** Retrieved January 30, 2021, from https://www.bis.org/publ/mktc05.pdf

Bank for International Settlements. (2019). **Triennial Central Bank Survey - Foreign exchange turnover in April 2019.** Retrieved January 30, 2021, from https://www.bis.org/statistics/ rpfx19_fx.pdf

Malinova, K., Park, A., and Riordan, R. (2018). **Do retail investors suffer from high frequency traders?** Retrieved January 30, 2021, from http://dx.doi.org/10.2139/ssrn.2183806

Menkhoff, L., Sarno, L., Schmeling, M., and Schrimpf, A. (2016**). Information flows in foreign exchange markets: Dissecting customer currency trades.** Retrieved January 30, 2021, from https://www.bis.org/publ/work405.pdf

Rime, D. and Schrimpf, A. (2013). The anatomy of the global FX market through the lens of the 2013 Triennial Survey, **BIS Quarterly Review**. Retrieved January 30, 2021, from https://www.bis.org/publ/qtrpdf/r_qt1312e.pdf

Schrimpf, A. and Sushko, V. (2019). FX trade execution: Complex and highly fragmented, **BIS Quarterly Review.** Retrieved January 30, 2021, from https://www.bis.org/publ/ qtrpdf/r_qt1912.pdf

Interviews

Counter Trader (pseudonym). (2021). **Interview.** A part-time Forex trader, 26 years old, graduated from Mae Jo University with a bachelor's degree in public administration and is currently unemployed. Chiang Mai, Thailand.

Gold Hunter (pseudonym). (2021). **Interview.** A part-time Forex trader, 29 years old, graduated from Rajamangala University of Lanna (Chiang Mai) with a bachelor's degree in Engineering, and is a chicken egg shop owner. Chiang Mai, Thailand.

News Gambler (pseudonym). (2021). **Interview.** A part-time Forex trader, 40 years old, graduated from Chiang Mai Technical College with a high vocational certificate in electronics, and is an organic vegetable farm owner. Chiang Mai, Thailand.

Trader's Way (pseudonym). (2021). **Interview.** A full-time Forex trader, 37 years old, graduated from Chiang Mai University with a bachelor's degree in business administration. Chiang Mai, Thailand.