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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

THOMAS G. BRUTON
CLERK, U.S. DISTRICT COURT

JUDGE GETTLEMAN

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| UNITED STATES OF AMERICA<br><br>v.<br><br>JITESH THAKKAR,<br><br>Defendant. | No. 18 CR 36<br><br>MAGISTRATE JUDGE MASON<br><br>Violations: Title 7, United States Code, Sections 6c(a)(5)(C) and 13(a)(2); Title 18, United States Code, Sections 371 and 2. |

## INDICTMENT

The SPECIAL AUGUST 2017 GRAND JURY charges that at times material to this Indictment:

### The Defendant

1.      JITESH THAKKAR, the defendant, was the founder and principal of Edge Financial Technologies, Inc. ("Edge"), an information technology consulting firm headquartered in Chicago, Illinois.  Edge marketed itself as a technology partner and a platform for professional traders.  Since founding Edge, THAKKAR worked on several algorithmic trading strategies and worked with clients to develop custom solutions and order types.  As the founder, principal, and a Chief Architect of Edge, THAKKAR also led, managed, and supervised other Edge personnel in the design of custom trading software for Edge clients.

2.      THAKKAR was invited to, and served on, the Commodity Futures Trading Commission ("CFTC")'s Technology Advisory Committee, Subcommittee on

Automated and High Frequency Trading from approximately 2012 to at least approximately 2013.[1]

## Navinder Sarao

3.     Navinder Sarao was a futures trader who lived in the United Kingdom. Sarao traded from proprietary trading companies in London and from his residence in West London, England.  Sarao traded predominantly E-Mini S&P 500 ("E-Mini") futures contracts on the Chicago Mercantile Exchange ("CME").  Sarao traded futures contracts using commercially available trading software, including automated trading software.

## Relevant Definitions and Market Background

4.     A futures contract was a standardized, legally binding agreement that, once executed, obligated the parties to the contract to buy or to sell a specific product or financial instrument in the future.  That is, the buyer and seller of a futures contract agreed on a price today for a product or financial instrument to be delivered (by the seller), in exchange for money (to be provided by the buyer), on a future date.

5.     Futures contracts were traded on markets designated and regulated by the United States Commodity Futures Trading Commission ("CFTC").

6.     The CME Group Inc. ("CME Group") was a commodities marketplace made up of several exchanges, including the CME, which was based in Chicago,

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[1]     All dates and times in this Indictment are approximate.  Unless otherwise noted, all times in this Indictment are provided in Central Time and based on a 24-hour clock.

Illinois. At all relevant times, the CME was a registered entity, as defined in Title 7, United States Code, Section 1a(40), and subject to regulation by the CFTC. Market participants trading on the CME were subject to its rules.

7. The CME utilized the "Globex" global electronic trading platform, which allowed market participants to trade futures contracts from anywhere in the world. The CME Group operated Globex using computer servers located in Chicago and Aurora, Illinois.

8. Traders using Globex could place orders in the form of "bids" to buy or "offers" to sell one or more futures contracts at various prices, or "levels." Trading on Globex was conducted electronically using a visible "order book" that displayed quantities of anonymous orders (*i.e.*, offers to sell futures contracts and bids to buy futures contracts). An order was "filled" or "executed" when a buyer's bid price and a seller's offer price matched for a particular contract. The minimum price increment at which a futures contract could trade on the CME was called a "tick," and the value of a tick for each contract was set by the CME. Futures contracts traded on set, periodic expiration cycles (*i.e.*, monthly or quarterly).

9. The E-Mini was a stock market index futures contract that represented an agreement to buy or sell the future cash value of the Standard & Poor's 500 Index, which was an index of 500 U.S. stocks, at a specified date. E-Mini futures contracts were traded on the CME through Globex.

## Spoofing

10.     "Spoofing" was the unlawful practice of bidding or offering with the intent, at the time the bid or offer was placed, to cancel the bid or offer before it was executed.  Spoofing could be used as a method to engage in market manipulation. One of the many ways that spoofing could be used as a form of market manipulation in the futures contract markets was as follows:

a.     A trader places one or more large orders either to buy or to sell futures contracts on one side of the market, which the trader intends, at the time the orders are placed, to cancel before they are executed (the "Spoof Orders").  To drive prices up, the trader places Spoof Orders to buy, which create the false impression in the market of increased demand.  To drive prices down, the trader places Spoof Orders to sell, which create the false impression in the market of increased supply.

b.     In conjunction with the Spoof Orders' placement, the same trader also places one or more genuine orders in a much lower quantity on the opposite side of the market that the trader, by contrast, intends to execute (the "Primary Orders").

c.     By placing the Spoof Orders, the trader intends to inject false and misleading information (*i.e.*, orders the trader does not intend to execute) into the market to create the false impression of increased supply or demand.

d.     This false and misleading information may, and often does, cause other market participants to buy and to sell futures contracts at quantities, at

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prices (including by crossing the spread), and at times, that they otherwise would not because, among other things, market participants react to the apparent (although artificial) increase in supply or demand.  This, in turn, often causes the market price of a given futures contract to rise or to fall.

e.      When the market price changes as the result of the Spoof Orders in a manner, and to a degree, that the trader intends, the trader's Primary Orders are often filled at favorable quantities, prices, and times that otherwise would not have been available, but for the Spoof Orders.

f.      During this process, the trader intends and attempts to, and often does, cancel the Spoof Order before any part of that order is executed.

## COUNT ONE

### (Conspiracy to Commit Spoofing)

11.     Paragraphs 1 through 10 of this Indictment are incorporated here.

12.     Beginning in or around October 2011 and continuing until in or around April 2015, the exact dates being unknown to the Grand Jury, THAKKAR, the defendant, along with his co-conspirators, in Chicago, in the Northern District of Illinois, and elsewhere, knowingly conspired with others, known and unknown to the Grand Jury, to commit an offense against the United States, that is, to knowingly engage in trading, practice, and conduct, on and subject to the rules of a registered entity, namely, the CME, that was "spoofing," that is, bidding and offering with the intent, at the time the bid or offer was entered, to cancel the bid or offer before execution, in violation of Title 7, United States Code, Sections 6c(a)(5)(C) and 13(a)(2),

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and one or more co-conspirators committed an overt act in an effort to advance the goal of the conspiracy.

## Purpose of the Conspiracy

13.    It was the purpose of the conspiracy for THAKKAR and his co-conspirators to unlawfully enrich themselves by:   (i) developing a customized, automated program designed to place certain orders into the market while mitigating the risk that these orders would be "hit," or executed; (ii) selling, delivering, and attempting to sell and deliver the customized automated program to traders, including Sarao, so that the traders can use the program to place orders into futures markets, including the market for E-Mini futures contracts, that they intended to cancel before execution.

## Manner and Means of the Conspiracy

14.    Beginning as early as January 2009, and by at least in or around May 2011, Sarao had devised a concept for a customized, automated program to execute a strategy to place large-volume orders that, at the time the orders were placed, Sarao intended to cancel before execution.  The program that Sarao devised—and that THAKKAR, Sarao, and others at Edge, ultimately developed and implemented—modified a particular order by adding approximately one lot to the order, thereby increasing the quantity of that order by approximately one lot (the "Back of Book Function").  This automated Back of Book Function was triggered when other market participants placed an order (i) at a point in time after Sarao had placed his Back-of-Book order; (ii) of a certain minimum quantity; and (iii) at the same price point as

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Sarao's Back-of-Book order. The effect of the automatic quantity modification "up" was to revert Sarao's order to the back of the order queue (while also increasing his order size), behind all other orders placed at that given price point, thus significantly reducing the risk that Sarao's Back-of-Book orders would be executed.

15.     The operational effectiveness of the Back of Book Function allowed Sarao to place a Back-of-Book order close to or at the best bid or offer price on either side of the market with a high degree of confidence that the order would not be executed. This is because Sarao's order remained at the back of the order queue and—due to the CME's First-In, First-Out matching engine for E-Mini futures contracts—would not be filled unless all of the orders in front of Sarao's Back-of-Book order at a certain price point were executed first.

16.     Sarao requested and ultimately activated the Back of Book Function in order to place Back-of-Book orders into the market that Sarao did not intend to be executed, or "hit." The Back-of-Book orders were intended to create a false sense of supply (in the case of a sell-side Back-of-Book order) or demand (in the case of a buy-side Back-of-Book order), induce other market participants to react to this deceptive information, and to pump up or deflate E-Mini futures contracts prices, all so that Sarao could profit, mitigate his potential loss, or open or liquidate his position at a more favorable quantity, price, or time than was otherwise available at the time before he activated the Back of Book Function.

17.     Beginning at least as early as in or about October 2011, THAKKAR, Sarao, and others at Edge, during and in furtherance of the conspiracy,

communicated via email messages, phone calls, and voicemail messages regarding the custom functionality that Sarao devised and requested, and that THAKKAR and others at Edge developed and implemented, including the parameters of the Back of Book Function, which Sarao and THAKKAR also referred to in communications as the "back of the book" function.

18.     THAKKAR agreed to develop this custom functionality for Sarao that included the Back of Book Function.  THAKKAR led and oversaw its development for Sarao, and was Sarao's principal point of contact at Edge.

19.     On or about October 12, 2011, Sarao sent an email to THAKKAR regarding the custom functionality Sarao requested.  Among other functions, Sarao described "Join" and "Join Side" functions as two similar functions that he would use to place orders automatically upon certain triggering events in the futures contracts markets.  Sarao's email continued, under a section labeled "Back of the book," that "[f]or both of the above order types"—*i.e.*, "Join" and "Join Side":

> [W]e need to have the option to keep the order at the back of the book.  We achieved this by increasing/decreasing the order by 1 lot after it was activated every time a new order was placed on my JOIN activated order.  This started to look a little strange with 1 lots changing all the time, so we will have to make it that the order is increased by 1 every time an order greater than say 20 lots is placed.  This value may be subject to change.

20.     After receiving this message, THAKKAR engaged in a series of emails with Sarao to begin work on the requested project.  For example, on or about November 3, 2011, after exchanging numerous prior emails with Sarao, THAKKAR

emailed Sarao and wrote, "Here are my notes from yesterday's talk. I'd appreciate it, if you can clarify them more, and add more examples." THAKKAR asked Sarao to clarify "when we'd delete the order upon partial fill," and also asked Sarao to "clarify" the "back of book" function and other functions. Specifically, THAKKAR wrote in the notes, "back of book – what is the trigger" and listed the following preliminary criteria and parameters for this "back of book" function:

> [E]veryone [*sic*] someone else places 10 on top of your order, increase your order by 1 lot.
>
> you place 300qty order
> another 10+ qty comes in, change to 299
> another 10+ qty comes in, change to 300
> keep changing it between 299 or 300[.]

21.     On or about November 5, 2011, Sarao replied to THAKKAR's November 3, 2011 email and answered THAKKAR's specific question about when to "delete the order upon partial fill" and noted "[t]he rest of the stuff you have accurately remembered."

22.     On or about November 10, 2011, THAKKAR sent an email to Sarao confirming that "[w]e have a working version of the application, with most of the features working." In his email, THAKKAR asked Sarao to "[p]lease read the attached document carefully" because "[t]he software is made to work exactly as this document states." The attachment to THAKKAR's email included detailed descriptions of the "Back of the book" functionality as well as the associated "Join" and "Join Side" order types with which this functionality could be used. Specifically, the attachment to THAKKAR's email stated (highlighting omitted):

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> If "Back of the book" option is checked, based on the threshold qty (assume the default value 10 is used), the app will increase/decrease the order qty by 1 lot (after this [JOIN or JOIN SIDE] order is activated) every time new lots more than 10 (exclude 10) are placed on this order. Example: another 10+ qty order comes, change to 299, another 10+ qty order comes, change to 300. Keep changing between 299 or 300.

23. On or about November 11, 2011, THAKKAR sent Sarao an email bearing the subject "First test version" and attaching a file called "NAVTrader_1111_new.NOTzip," which, in turn, contained computer code files relating to the "Join," "Join Side," and "Back of Book" functionalities.

24. During the following months, THAKKAR sent and caused to be sent to Sarao several iterations of the custom trading program—*i.e.*, the "NAVTrader"—that THAKKAR and others at Edge were developing for Sarao.

25. On or about January 25, 2012, after numerous communications with Sarao and others at Edge regarding the development of the NAVTrader program, THAKKAR sent Sarao an email attaching a "Consulting Agreement" that, among other things, confirmed the purpose of Sarao's Back of Book Function (which the agreement refers to as the "back of book" function), specifically:

    a. In the "Scope of Services to Client" section of this agreement, it stated "(he doesn't want to be hit on the join orders)"—a "Join" order being a custom order type that NAVTrader supported—which would be implemented using a "new functionality" that included "back of book."

    b. In addition, the "Software Rights" section of the agreement provided that "[b]oth [Edge] and [Sarao] shall own the all [*sic*] rights to the source code. At the end of the project, [Edge] shall have all rights to modify, use or sell any code, or derivative work in any form."

26.     On or about January 30, 2012, in response to THAKKAR's January 25, 2012 email attaching the agreement, Sarao replied by email with some comments and requests to clarify his requirements.  That same day, THAKKAR responded to Sarao via email, "Yes, no problem.  We will do all these items."

27.     On certain dates during the conspiracy, including but not limited to on or about February 17, 2012, on or about March 27, 2012, and on or about May 11, 2012, THAKKAR also engaged in communications with others and/or appeared to author certain documents regarding the futures trading industry and the crime of spoofing.

28.     Sarao used the Back of Book Function in the NAVTrader program to place Back-of-Book orders in the market for E-Mini futures contracts starting at least in or about January 2012 and continuing through at least in or about October 2013. During this time period, Sarao activated the Back of Book Function in the NAVTrader program hundreds of times, resulting in the placement of over one thousand Back-of-Book orders in the market for E-Mini futures contracts.

29.     THAKKAR sent and caused to be sent to Sarao many additional versions of the NAVTrader program, including after October 2013.  THAKKAR, others at Edge, and Sarao communicated by email and other means regarding the NAVTrader program, including modifications to this program, through at least in or about January 2015.  For example, on or about January 9, 2015, following a series of communications regarding the NAVTrader program since early 2012, THAKKAR forwarded by email to Sarao a further revised version of NAVTrader.

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30.     THAKKAR also continued to reference Edge's purported contractual right to resell the NAVTrader program and/or its functionality that Edge had created for and delivered to Sarao. For example, on or about December 17, 2014, THAKKAR sent an email to Sarao regarding this issue and added, "Mate, I remember we did this project for very low cost, and you were suppose[d] to help me sell to other traders so that we can make some money."

31.     THAKKAR also continued to communicate with Sarao until at least in or about April 2015 in order to request additional payment for Edge's work on NAVTrader. For example, on or about April 5, 2015, THAKKAR sent an email to Sarao inquiring about Sarao's payment for Edge's work on an updated version of NAVTrader, writing, among other things, "Did you expect us to work for free?"

32.     As a result of his use of the Back of Book Function to place Back-of-Book orders, Sarao profited over $1 million.

33.     As a result of Sarao's use of the Back of Book Function to place Back-of-Book orders, other participants in the E-Mini futures contract market suffered losses of over $10 million.

34.     In exchange for Edge's consulting work on NAVTrader for Sarao, THAKKAR received at least $24,200.

**Overt Acts**

35.     In an effort to advance the goal of the conspiracy, THAKKAR and others, both known and unknown to the Grand Jury, committed and caused others to commit

at least one of the following overt acts, among others, in the Northern District of

Illinois, and elsewhere:

     a.     On or about February 25, 2013 at approximately 13:37:54.313, Sarao used the Back of Book Function to place an order to sell E-Mini futures contracts.

     b.     On or about March 8, 2013, at approximately 9:52:23.983, Sarao used the Back of Book Function to place an order to sell E-Mini futures contracts.

     c.     On or about December 16, 2014, THAKKAR sent an email to Sarao regarding an updated version of NAVTrader and added, "Mate, I remember we did this project for very low cost, and you were suppose[d] to help me sell to other traders so that we can make some money."

     d.     On or about April 5, 2015, THAKKAR sent an email to Sarao inquiring about Sarao's payment for Edge's work on a further updated version of NAVTrader, writing, among other things, "Did you expect us to work for free?"

All in violation of Title 18, United States Code, Section 371.

## COUNTS TWO AND THREE

### (Spoofing)

36.     Paragraphs 1 through 10 and 13 through 35 of this Indictment are incorporated here.

37.     On or about the dates set forth below, THAKKAR, in Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere, knowingly engaged in, and willfully aided and abetted, trading, practice, and conduct on or subject to the rules of CME Group markets that was "spoofing," that is bidding and offering with the intent, at the time the bid or offer was placed, to cancel the bid or offer before execution, by causing to be transmitted, to a CME Group server, E-Mini futures

contract orders that he intended, at the time the orders were placed, to cancel before

execution, as set forth below:

| Count | Approx. Date Order Placed | Approx. Time Order Placed (24-clock; Central Time) | Side | Approx. Number of Contracts in Order | Approx. Price | Approx. Total Value of Order |
|-------|---------------------------|-----------------------------------------------------|------|--------------------------------------|---------------|------------------------------|
| 2 | Feb. 25, 2013 | 13:37:54.313 | Sell | 571 | $1,504.00 | $42,939,200 |
| 3 | Mar. 8, 2013 | 9:52:23.983 | Sell | 570 | $1,541.00 | $43,918,500 |

All in violation of Title 7, United States Code, Sections 6c(a)(5)(C) and

13(a)(2) and Title 18, United States Code, Section 2.

A TRUE BILL:

_____

FOREPERSON

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SANDRA L. MOSER
Acting Chief, Fraud Section

Michael T. O'Neill
Matthew F. Sullivan
Trial Attorneys, Fraud Section

Criminal Division
U.S. Department of Justice