CBOE Holdings, Inc. Form SC 13G February 11, 2016

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

SCHEDULE 13G

Under the Securities Exchange Act of 1934

	CBOE HOLDINGS, 1	INC.
	(Name of Issuer)	
	Unrestricted Common Stoc	ck, par value \$0.01
(Tit	le of Class of Securities)	
	12503M108	
	(CUSIP Number) September 4, 201	.5
(Date of Even	nt Which Requires Filing of	this Statement)
Check the appropriate box to Schedule is filed:	designate the rule pursuant	to which this
[X] Rule 13d-1(b)		
[_] Rule 13d-1(c)		
[_] Rule 13d-1(d)		
*The remainder of this cover initial filing on this form and for any subsequent amend the disclosures provided in	with respect to the subject lment containing information	class of securities,
The information required in t deemed to be "filed" for the Act of 1934 ("Act") or otherw of the Act but shall be subjesee the Notes).	purpose of Section 18 of the rise subject to the liability	ne Securities Exchange ties of that section
	:======================================	
CUSIP NO. 12503M108	13G	Page 2 of 8 Pages
(1) NAMES OF REPORTING PERS I.R.S. IDENTIFICATION	SONS. NOS. OF ABOVE PERSONS (enti	ties only).
Renaissance Technologie	s LLC 26-0385758	
(2) CHECK THE APPROPRIATE BO (a) [_]	OX IF A MEMBER OF A GROUP (S	SEE INSTRUCTIONS):

	(b) [_]			
(3)	SEC USE ONLY			
(4)	CITIZENSHIP OR PLACE OF OR	GANIZATION		
	Delaware			
			(5)	SOLE VOTING POWER
NUMBER OF SHARES BENEFICIALLY OWNED				4,399,700
	BY EACH REPORTING PERSON WITH:		(6)	SHARED VOTING POWER
				0
			(7)	SOLE DISPOSITIVE POWER
				4,399,700
			(8)	SHARED DISPOSITIVE POWER
				0
(9)	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON			
		4,399,700		
(10)	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES			
	(SEE INSTRUCTIONS)			[_]
(11)	PERCENT OF CLASS REPRESE	NTED BY AMOUNT IN	ROW	(9)
		5.36 %		
(12)	TYPE OF REPORTING PERSON	(SEE INSTRUCTIONS	5)	
		Page 2 of 8 pag	_{ses}	
		 Page 3 of 8 pag		
	 IP NO. 12503M108	 13G		 Page 3 of 8 Page
(1)	NAMES OF REPORTING PERSON I.R.S. IDENTIFICATION NO	S.		ENTITIES ONLY).
	RENAISSANCE TECHNOLOGIES	HOLDINGS CORPORAT	CION	13-3127734
(2)	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS) (a) [_] (b) [_]			
(3)	SEC USE ONLY			

(4) C.	ITIZENSHIP OR PLACE OF ORGANIZATION		
	Delaware		
		(5)	SOLE VOTING POWER
Ε	NUMBER OF SHARES BENEFICIALLY OWNED		4,399,700
	BY EACH REPORTING PERSON WITH:	(6)	SHARED VOTING POWER
			0
		(7)	SOLE DISPOSITIVE POWER
			4,399,700
		(8)	SHARED DISPOSITIVE POWER
			0
(9) <i>I</i>	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EAC	CH REE	PORTING PERSON
	4,399,700		
(10)	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (SEE INSTRUCTIONS) [_]	(9) EX	KCLUDES CERTAIN SHARES
(11)	PERCENT OF CLASS REPRESENTED BY AMOUNT IN	N ROW	(9)
	5.36 %		
(12)	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS HC	 S)	
	Page 3 of 8 pag		
CUSI	P NO. 12503M108 13G		Page 4 of 8 Page:
 Item 1			
(á	a) Name of Issuer		
	CBOE HOLDINGS, INC.		
(}	b) Address of Issuer's Principal Executive	⊇ Offi	ices
(*	400 South LaSalle Street, Chicago, Ill		
Item 2		1111011	
	a) Name of Person Filing:		
()			anna Taghnalari a II C
	This Schedule 13G is being filed by Re ("RTC") and Renaissance Technologies F		

(b) Address of Principal Business Office or, if none, Residence.

The principal business address of the reporting persons is:

800 Third Avenue New York, New York 10022

(c) Citizenship.

RTC is a Delaware limited liability company, and RTHC is a Delaware corporation.

(d) Title of Class of Securities.

Unrestricted Common Stock, par value \$0.01

(e) CUSIP Number.

12503M108

Page 4 of 8 pages

- Item 3. If this statement is filed pursuant to Rule 13d-1 (b) or 13-d-2 (b) or (c), check whether the person filing is a:
- (a) [_] Broker or dealer registered under section 15 of the Act.
- (b) [_] Bank as defined in section 3(a)(6) of the Act.
- (c) [_] Insurance Company as defined in section 3(a)(19) of the Act.
- (d) [_] Investment Company registered under section 8 of the Investment Company Act.
- (e) [x] Investment Adviser in accordance with Sec.240.13d-1(b) (1) (ii) (E).
- (f) [_] Employee Benefit Plan or Endowment Fund in accordance with Sec. 240.13d-1 (b) (1) (ii) (F).
- (g) [_] Parent holding company, in accordance with Sec.240.13d-1(b)(1)(ii)(G).
- (h) $[_]$ A savings associations as defined in Section 3(b) of the Federal Deposit Insurance Act.
- (i) [_] A church plan that is excluded from the definition of an investment company under section 3(c)(14) of the Investment Company Act of 1940.
- (j) $[_]$ Group, in accordance with Sec.240.13d-1(b)(1)(ii)(J).

Item 4. Ownership.

(a) Amount beneficially owned.

RTC: 4,399,700 shares

RTHC: 4,399,700 shares, comprising the shares beneficially owned by RTHC, because of RTHC's majority ownership of RTC.

(b) Percent of Class.

RTC: 5.36 % RTHC: 5.36 %

- (c) Number of shares as to which the person has:
 - (i) sole power to vote or to direct the vote:

RTC: 4,399,700 RTHC: 4,399,700

(ii) Shared power to vote or to direct the vote: 0

(iii) sole power to dispose or to direct the disposition of:

RTC: 4,399,700 RTHC: 4,399,700

(iv) Shared power to dispose or to direct the disposition of:

RTC: 0 RTHC: 0

Page 5 of 8 pages

Item 5. Ownership of Five Percent or Less of a Class.

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following: [_]

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

Certain funds and accounts managed by RTC have the right to receive dividends and proceeds from the sale of the securities which are the subject of this report.

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company.

Not applicable

Item 8. Identification and Classification of Members of the Group.

Not applicable

Item 9. Notice of Dissolution of a Group.

Not applicable

Page 6 of 8 pages

Item 10. Certification

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Date: February 11, 2016

Renaissance Technologies LLC

By: Mark Silber

Executive Vice President

Renaissance Technologies Holdings Corporation

By: Mark Silber
Vice President

Attention: Intentional misstatements or omissions of fact constitute Federal criminal violations (See $18\ U.S.C.\ 1001$).

Page 7 of 8 Pages

EXHIBIT 99.1

AGREEMENT REGARDING JOINT FILING

UNDER RULE 13D-1(K) OF THE EXCHANGE ACT

In accordance with Rule 13d-1(k) under the Securities Exchange Act of 1934, as amended, each of the undersigned agrees to the filing on behalf of each of a Statement on Schedule 13G, and all amendments thereto, with respect to the shares of Unrestricted Common Stock, par value \$0.01 of CBOE HOLDINGS, INC.

Date: February 11, 2016

Renaissance Technologies LLC

By: Mark Silber

Executive Vice President

Renaissance Technologies Holdings Corporation

By: Mark Silber Vice President

Page 8 of 8 Pages