

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT3560821

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
PANAGIOTIS XYTHALIS	10/05/2015
FATEEN SHARABY	10/07/2015
DHIRAJ BAWADHANKAR	10/07/2015
MOLANG DONG	10/05/2015
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	CHICAGO MERCANTILE EXCHANGE INC.
<b>Street Address:</b>	20 SOUTH WACKER DRIVE
<b>City:</b>	CHICAGO
<b>State/Country:</b>	ILLINOIS
<b>Postal Code:</b>	60606
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	14877658
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	312-291-0860
<b>Email:</b>	docket-us@lsk-iplaw.com
<b>Correspondent Name:</b>	LEMPIA SUMMERFIELD KATZ LLC/CME
<b>Address Line 1:</b>	ONE NORTH LASALLE STREET
<b>Address Line 2:</b>	SUITE 2900
<b>Address Line 4:</b>	CHICAGO, ILLINOIS 60602
<b>ATTORNEY DOCKET NUMBER:</b>	4672-14017BUS
<b>NAME OF SUBMITTER:</b>	JAMES L. KATZ
<b>SIGNATURE:</b>	/James L. Katz/
<b>DATE SIGNED:</b>	10/07/2015
<b>Total Attachments: 15</b>	
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ASSIGNMENT

WHEREAS, Panagiotis Xythalis, Jay Zhu, Fateen Sharaby, Dhiraj Bawadhankar, Molang Dong, and, hereinafter called the "Assignors", have made the invention described in the United States patent application entitled TRANSACTION PROCESSOR FOR CLEARING INTEREST RATE SWAPS WITH IMPROVED EFFICIENCY, executed by Assignors on the same date as, or on a date prior to, this Assignment;

WHEREAS, CHICAGO MERCANTILE EXCHANGE INC., a corporation organized and existing under the laws of the State of Illinois, having a place of business at 20 South Wacker Drive, Chicago, IL 60606, hereinafter called the "Assignee", desires to acquire the entire right, title and interest in and to the invention and the patent application identified above, and all patents which may be obtained for said invention, as set forth below;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00), and other valuable and legally sufficient consideration, the receipt of which by the Assignors from the Assignee is hereby acknowledged, the Assignors have sold, assigned and transferred, and by these presents do sell, assign and transfer to the Assignee, the entire right, title and interest for the United States in and to the invention and the patent application identified above, and any patents that may issue for said invention in the United States; together with the entire right, title and interest in and to said invention and all patent applications and patents issuing therefrom in all countries foreign to the United States, including the full right to claim for any such application all benefits and priority rights under any applicable convention; together with the entire right, title and interest in and to all continuations, divisions, renewals and extensions of any of the patent applications and patents defined above; together with the right to recover all damages, including, but not limited to, a reasonable royalty, by reason of past, present, or future infringement or any other violation of patent or patent application rights; to have and to hold for the sole and exclusive use and benefit of the Assignee, its successors and assigns, to the full end of the term or terms for all such patents.

The Assignors hereby covenant and agree, for both the Assignors and the Assignors' legal representatives, that the Assignors will assist the Assignee in the prosecution of the patent application identified above; in the making and prosecution of any other patent applications that the Assignee may elect to make covering the invention identified above; in vesting in the Assignee like exclusive title in and to all such other patent applications and patents; and in the prosecution of any interference which may arise involving said invention, or any such patent application or patent; and that the Assignor will execute and deliver to the Assignee any and all additional papers which may be requested by the Assignee to carry out the terms of this Assignment.

The Commissioner of Patents and Trademarks is hereby authorized and requested to issue patents to the Assignee in accordance with the terms of this Assignment.

IN TESTIMONY WHEREOF, the Assignors have executed this agreement.

DATED:

10/05/2015

  
\_\_\_\_\_  
Panagiotis Xythalis

DATED:

\_\_\_\_\_

\_\_\_\_\_  
Jay Zhu

DATED:

\_\_\_\_\_

\_\_\_\_\_  
Fateen Sharaby

DATED:

\_\_\_\_\_

\_\_\_\_\_  
Dhiraj Bawadhankar

DATED:

\_\_\_\_\_

\_\_\_\_\_  
Molang Dong

STATE OF New York )  
COUNTY OF New York ) ss.

I, Bridget Sullivan, a Notary Public in and for the County and State aforesaid, do hereby certify that Panagiotis Xythalis, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this 3<sup>rd</sup> day of October, 2015.

Bridget Sullivan  
Notary Public

My Commission Expires: November 4, 2017

**BRIDGET SULLIVAN**  
**NOTARY PUBLIC-STATE OF NEW YORK**  
No. 015U6030405  
Qualified in New York County  
My Commission Expires November 04, 2017

STATE OF \_\_\_\_\_ )  
COUNTY OF \_\_\_\_\_ ) ss.

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Jay Zhu, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Fateen Sharaby, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Dhiraj Bawadhankar, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Molang Dong, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

ASSIGNMENT

WHEREAS, Panagiotis Xythalis, Jay Zhu, Fateen Sharaby, Dhiraj Bawadhankar, Molang Dong, and, hereinafter called the "Assignors", have made the invention described in the United States patent application entitled TRANSACTION PROCESSOR FOR CLEARING INTEREST RATE SWAPS WITH IMPROVED EFFICIENCY, executed by Assignors on the same date as, or on a date prior to, this Assignment;

WHEREAS, CHICAGO MERCANTILE EXCHANGE INC., a corporation organized and existing under the laws of the State of Illinois, having a place of business at 20 South Wacker Drive, Chicago, IL 60606, hereinafter called the "Assignee", desires to acquire the entire right, title and interest in and to the invention and the patent application identified above, and all patents which may be obtained for said invention, as set forth below;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00), and other valuable and legally sufficient consideration, the receipt of which by the Assignors from the Assignee is hereby acknowledged, the Assignors have sold, assigned and transferred, and by these presents do sell, assign and transfer to the Assignee, the entire right, title and interest for the United States in and to the invention and the patent application identified above, and any patents that may issue for said invention in the United States; together with the entire right, title and interest in and to said invention and all patent applications and patents issuing therefrom in all countries foreign to the United States, including the full right to claim for any such application all benefits and priority rights under any applicable convention; together with the entire right, title and interest in and to all continuations, divisions, renewals and extensions of any of the patent applications and patents defined above; together with the right to recover all damages, including, but not limited to, a reasonable royalty, by reason of past, present, or future infringement or any other violation of patent or patent application rights; to have and to hold for the sole and exclusive use and benefit of the Assignee, its successors and assigns, to the full end of the term or terms for all such patents.



The Assignors hereby covenant and agree, for both the Assignors and the Assignors' legal representatives, that the Assignors will assist the Assignee in the prosecution of the patent application identified above; in the making and prosecution of any other patent applications that the Assignee may elect to make covering the invention identified above; in vesting in the Assignee like exclusive title in and to all such other patent applications and patents; and in the prosecution of any interference which may arise involving said invention, or any such patent application or patent; and that the Assignor will execute and deliver to the Assignee any and all additional papers which may be requested by the Assignee to carry out the terms of this Assignment.

The Commissioner of Patents and Trademarks is hereby authorized and requested to issue patents to the Assignee in accordance with the terms of this Assignment.

IN TESTIMONY WHEREOF, the Assignors have executed this agreement.

DATED: \_\_\_\_\_ Panagiotis Xythalis

DATED: \_\_\_\_\_ Jay Zhu

DATED: 10/7/2015 \_\_\_\_\_ Fateen Sharaby

DATED: 10/7/2015 \_\_\_\_\_ Dhiraj Bawadhankar

DATED: \_\_\_\_\_ Molang Dong

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Panagiotis Xythalis, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Jay Zhu, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

STATE OF NEW YORK )  
 ) ss.  
COUNTY OF NEW YORK )

I, JASON SILVERSTEIN, a Notary Public in and for the County and State aforesaid, do hereby certify that Fateen Sharaby, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this 7<sup>th</sup> day of October, 2015.

  
\_\_\_\_\_  
Notary Public


My Commission Expires: April 22, 2017

**JASON SETH SILVERSTEIN**  
NOTARY PUBLIC-STATE OF NEW YORK  
No. 02516280218  
Qualified in New York County  
My Commission Expires April 22, 2017

STATE OF NEW YORK )  
 ) ss.  
COUNTY OF NEW YORK )

I, JASON SILVERSTEIN, a Notary Public in and for the County and State aforesaid, do hereby certify that Dhiraj Bawadhankar, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this 7<sup>th</sup> day of October, 2015.

  
\_\_\_\_\_  
Notary Public

My Commission Expires: April 22, 2017

**JASON SETH SILVERSTEIN**  
NOTARY PUBLIC-STATE OF NEW YORK  
No. 02516280218  
Qualified in New York County  
My Commission Expires April 22, 2017

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Molang Dong, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

**ASSIGNMENT**

WHEREAS, Panos Xythalis, Jay Zhu, Fateen Sharaby, Dhiraj Bawadhankar, and Molang Dong, and, hereinafter called the "Assignors", have made the invention described in the United States patent application entitled TRANSACTION PROCESSOR FOR CLEARING INTEREST RATE SWAPS WITH IMPROVED EFFICIENCY, executed by Assignors on the same date as, or on a date prior to, this Assignment;

WHEREAS, CHICAGO MERCANTILE EXCHANGE INC., a corporation organized and existing under the laws of the State of Illinois, having a place of business at 20 South Wacker Drive, Chicago, IL 60606, hereinafter called the "Assignee", desires to acquire the entire right, title and interest in and to the invention and the patent application identified above, and all patents which may be obtained for said invention, as set forth below;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00), and other valuable and legally sufficient consideration, the receipt of which by the Assignors from the Assignee is hereby acknowledged, the Assignors have sold, assigned and transferred, and by these presents do sell, assign and transfer to the Assignee, the entire right, title and interest for the United States in and to the invention and the patent application identified above, and any patents that may issue for said invention in the United States; together with the entire right, title and interest in and to said invention and all patent applications and patents issuing therefrom in all countries foreign to the United States, including the full right to claim for any such application all benefits and priority rights under any applicable convention; together with the entire right, title and interest in and to all continuations, divisions, renewals and extensions of any of the patent applications and patents defined above; together with the right to recover all damages, including, but not limited to, a reasonable royalty, by reason of past, present, or future infringement or any other violation of patent or patent application rights; to have and to hold for the sole and exclusive use and benefit of the Assignee, its successors and assigns, to the full end of the term or terms for all such patents.

The Assignors hereby covenant and agree, for both the Assignors and the Assignors' legal representatives, that the Assignors will assist the Assignee in the prosecution of the patent application identified above; in the making and prosecution of any other patent applications that the Assignee may elect to make covering the invention identified above; in vesting in the Assignee like exclusive title in and to all such other patent applications and patents; and in the prosecution of any interference which may arise involving said invention, or any such patent application or patent; and that the Assignor will execute and deliver to the Assignee any and all additional papers which may be requested by the Assignee to carry out the terms of this Assignment.

The Commissioner of Patents and Trademarks is hereby authorized and requested to issue patents to the Assignee in accordance with the terms of this Assignment.

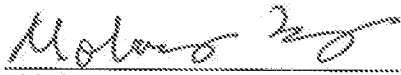
IN TESTIMONY WHEREOF, the Assignors have executed this agreement.

DATED: \_\_\_\_\_ Panagiotis Xythalis

DATED: \_\_\_\_\_ Jay Zhu

DATED: \_\_\_\_\_ Fateen Sharaby

DATED: \_\_\_\_\_ Dhiraj Bawadhankar

DATED: 10/05/2015  \_\_\_\_\_  
Molang Dong

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Panos Xythalis, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Jay Zhu, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Fateen Sharaby, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

STATE OF )  
 ) ss.  
COUNTY OF )

I, \_\_\_\_\_, a Notary Public in and for the County and State aforesaid, do hereby certify that Dhiraj Bawadhankar, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
Notary Public

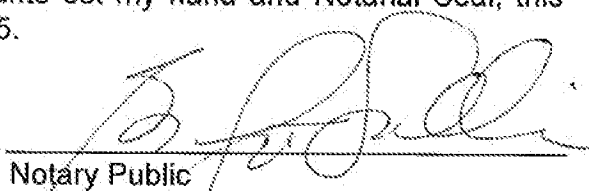
My Commission Expires: \_\_\_\_\_



STATE OF New York )  
COUNTY OF New York ) ss.

I, Bridget Sullivan, a Notary Public in and for the County and State aforesaid, do hereby certify that Molang Dong, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that (s)he signed, sealed and delivered the said instrument as his/her free and voluntary act for the uses and purposes therein set forth.

5 IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal, this 5 day of SEPTEMBER, 2015.

  
Notary Public

My Commission Expires: November 04, 2017

**BRIDGET SULLIVAN**  
**NOTARY PUBLIC-STATE OF NEW YORK**  
**No. 01SU6030405**  
**Qualified in New York County**  
**My Commission Expires November 04, 2017**