

Bloomberg

PRICELINK ACTIVEX
USER GUIDE

May 2012

Content

| | |
|---|----|
| Pricelink ActiveX Introduction..... | 3 |
| Sending Page-based Data | 5 |
| Clear Page Based Monitor | 5 |
| Update Page Based Monitor | 6 |
| Sending Digital Prices | 8 |
| Contribute Digital Data – Sub Contribute..... | 8 |
| Contribute Digital Data – Sub ContributeMPF | 9 |
| Contribute Historical Digital Data – Sub ContributeHistory..... | 11 |
| Maintaining the List of Instruments in a Monitor..... | 13 |
| Update Digital Monitor - MonitorBenchmark..... | 13 |
| Clear Monitor..... | 15 |
| Spike Management..... | 17 |
| Appendix - Tables | 18 |
| Table 1 – Transaction Types..... | 18 |
| Table 2 - Access Type..... | 18 |
| Table 3 - Bloomberg Yellow Keys | 19 |
| Table 4 - Slots | 19 |
| Table 5 – Condition Codes..... | 19 |

Pricelink ActiveX Introduction

What is it?

Bloomberg Pricelink allows for the contribution of live pricing updates to the Bloomberg Professional service. There are two options for clients: Pricelink via Excel Add-in (plink.xla in the install directory), or ActiveX library.

Pricelink ActiveX is suited for clients who wish to implement their price contributions programmatically, consolidating the publishing functionality with VB, C#, VBA coding, macros etc and can be used to improve the robustness of contributed pricing for critical data feeds, or ease the process of maintaining instruments that need to be regularly added, removed or updated on pricing monitors.

The Pricelink ActiveX is a library of objects that allows you to build your own custom applications to contribute data to Bloomberg in Pricelink format.

What programming languages are supported?

Pricelink ActiveX is a .Net component (Microsoft) so it is Microsoft Windows based. Supported languages are Visual Basic (VB, VBA) and C#.

Step-by-Step Setup

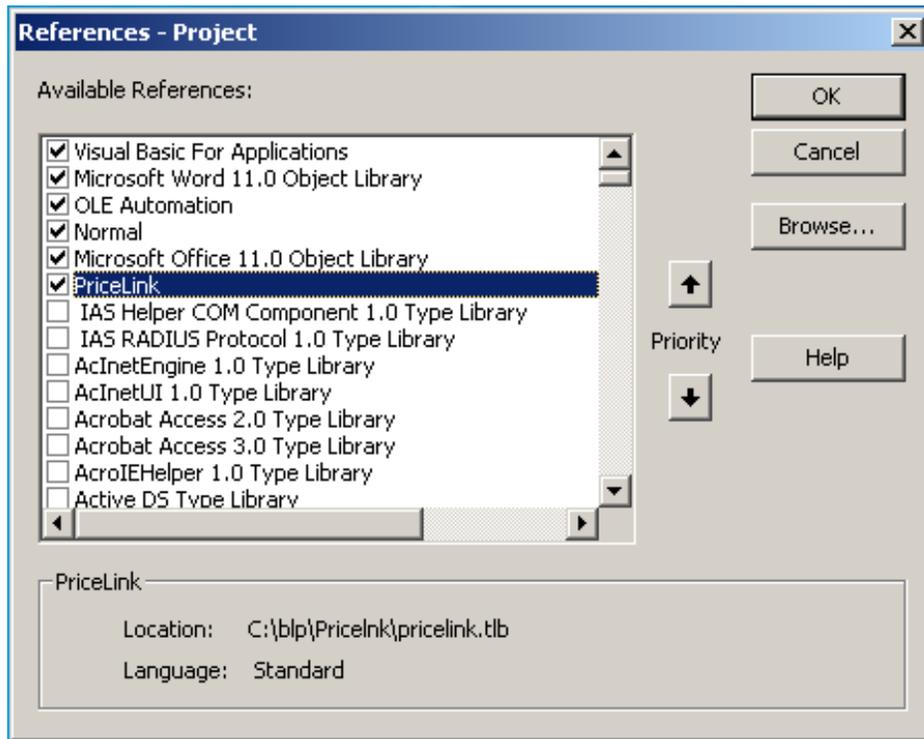
1. Install and configure Pricelink and make sure connectivity is established.
2. Add a reference to the Pricelink library.
3. Define contribution type – Page Based monitor (GPGX), Digital monitor (GDCO) or GDCO Monitor Maintenance.
4. Write code and test the calls.
5. Request to be moved to production.
6. Go live.

Sample Code

Sample code is available in the Microsoft Word version of this document by pressing ALT+F11 to open the VBA editor.

Installation

After you have installed Pricelink in the contributing PC, you should be able to add a reference to the Pricelink library on your project. To do that in VBA, go to the References option in the Tools menu and check off Pricelink. This will make the different Pricelink calls in the library available for use in your project. For use with other programming languages, follow the instructions provided with the package to set references to new libraries.



The C# Runtime Callable Wrappers for the Pricelink COM API can be found in the Interop.Pricelink.dll in the Pricelink installation directory.

C:\blp\PriceInk\Interop.Pricelink.dll

Connections

To establish a connection to the Pricelink session on a machine use the following code:

```
PriceLink.PriceLinkSession session = new PriceLink.PriceLinkSessionClass ();
```

This code only establishes a connection to the session, it does not cause one to be created, and can therefore be run multiple times without worrying about resource leaks.

Sending Page-based Data

Page-based data ("GPGX" pages) are presented in text format, 22 rows and 79 characters each row are available for data. Data contributed in this manner is not available in analytical functions such as HP, QR, GP, Etc.

The following Pricelink calls are available in the library for Page-based contributions:

Clear Page Based Monitor

ClearPage(ProductCode As String, PageNumber As Long)

ClearPage allows you to delete the entire contents of a single page. The parameters for this sub are:

ProductCode:

This is the same monitor number. Your Bloomberg representative will provide this number to you.

PageNumber:

This is the page number whose contents you want to clear.

Example Code

Sub Clearpage()

Dim session As PriceLink.PriceLinkSession

Set session = New PriceLink.PriceLinkSession

session.Clearpage "1", 1

'entering the product code 1 as string - "1" and the page number as long

End Sub

Return Value

None. On failure this method will throw a System.Runtime.InteropServices.COMException that will provide the specific error code.

Update Page Based Monitor

UpdatePartialPage(ProductCode As String, PageNumber As Long, Data As String, Row As Long, Column As Long, TotalRows As Long, TotalColumns As Long, [ForceThrough As Boolean = False])

UpdatePartialPage allows you update any section of the page. The parameters for this Sub are:

ProductCode:

This is the same monitor number. Your Bloomberg representative will provide this number to you.

PageNumber:

This is the page number where you want the update to appear.

Data:

This is the actual string of text you want to publish to the page.

Row:

This is the row number where you want the string of text to appear. Typically, a Bloomberg page will have 23 rows including the header. This parameter can have a value between 0 and 22.

Column:

This is the column number where you want the string of text to start. Typically, a Bloomberg page will have 79 columns. This parameter can have a value between 0 and 79.

TotalRows:

This field should be left empty as it is reserved for future development.

TotalColumns:

This field should be left empty as it is reserved for future development.

ForceThrough:

This Boolean field defines whether the update should be sent even if the data being published is not different from what is already displayed in the Bloomberg monitor. If this field is set to True, the update will flow through even if it is a duplicate update.

Return Value

None. On failure this method will throw a System.Runtime.InteropServices.COMException that will provide the specific error code.

Example Code

Sub UpdatePartialPage()

Dim session As PriceLink.PriceLinkSession

Set session = New PriceLink.PriceLinkSession

session.UpdatePartialPage "1", 1, "Updating the first row (Title), starting from the 15th column", 0, 15

session.UpdatePartialPage "1", 1, "Updating Row 1, starting from column 0", 1, 0

session.UpdatePartialPage "1", 1, "Updating Row 2, starting from column 5", 2, 5

'The above are updating product code 1 and the page 1

End Sub

```
99<go> Excel      100<go> Cropping    200<go> Launchpad  er test!
#  FORWARDS      -  SIZE  BID    OFFER  SIZE  -  -  LAST  Page 1 of 27

Updating the first row (Title), starting from the 15th column
Updating Row 1, starting from column 0
Updating Row 2, starting from column 5

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900      Singapore 65 6212 1000      U.S. 1 212 318 2000      Copyright 2012 Bloomberg Finance L.P.
SN 590257      GMT+8:00 6735-870-0 08-Apr-2012 16:44:24
```

Sending Digital Prices

Digital pricing is stored in record-based format within Bloomberg, and allows multiple contributors to send pricing for the same security (contributors are assigned a Pricing Source (PCS) which identifies the data as belonging to them). This data can be used in analytical functions such as HP, QR, GP, ALLQ etc. and be displayed. Typical applications include sending live indicative rates for fixed income instruments such as bonds, live rates for currency rates, index value updates etc.

The following Pricelink calls are available in the library for Digital Price contributions:

Contribute Digital Data – Sub Contribute

Sub Contribute(SecurityId As String, Value As String, TransactionType As String, [SecurityType As String], [SecurityIdType As String], [DateAndTime As Date], [Precision As Long = -1], [ForceThrough As Boolean = False])

Contribute allows you to send digital prices to Bloomberg for display in monitors and in the ALLQ screen. The parameters for this sub are:

SecurityId:

This is the actual identifier of the security for which you want to send the price.

Value:

This is the actual number/price you want to send.

TransactionType:

This field defines what the number in the value field represents. The most common transaction types are "Bid", "Ask", "BidSize", "AskSize", "BidYield", and "AskYield" for a complete list of transaction types, please refer to Table 1.

SecurityType:

This field specifies the feed's slot you will be using to send prices to Bloomberg. This parameter could take the values "Bond" for the Fixed Income slot, "Forex" for the Currency slot, or "Oddbond" for the Oddbond slot. Your Bloomberg representative will tell you what Slot you should use.

SecurityIdType:

This is the identifier type used in the SecurityId field. In this case, you should spell out the identifier type in upper case (i.e. "CUSIP", "ISIN", "VALOREN", etc)

DateAndTime:

This field should be left empty as it is reserved for future development.

Precision:

This field specifies the number of decimal places sent.

ForceThrough:

This Boolean field defines whether the update should be sent even if the data being published is not different from what is already displayed in the Bloomberg monitor. If this field is set to True, the update will flow through even if it is a duplicate update.

Return Value

None. On failure this method will throw a System.Runtime.InteropServices.COMException that will provide the specific error code.

Example Code

```
Sub SendDigitalPrice1()
```

```
    Dim session As PriceLink.PriceLinkSession  
    Set session = New PriceLink.PriceLinkSession
```

```
    session.Contribute "MRBS1", "-80", "BID", "FOREX", "TICKER", , 4, True
```

```
End Sub
```

Contribute Digital Data – Sub ContributeMPF

```
Sub ContributeMPF(SecurityId As String, Value As String, TransactionType As String, SecurityType  
As String, SecurityIdType As String, [FirmId As String], [CondCode As String], [MarketStatus As  
String], [DateAndTime As Date], [Precision As Long = -1], [ForceThrough As Boolean = False])
```

ContributeMPF allows you to send digital prices to Bloomberg for display in monitors and in the ALLQ screen just like the Contribute sub above, but it offers additional functionality like the option to specify a condition code for the transaction. ContributeMPF allows inter-dealer brokers to send to Bloomberg digital prices coming from multiple dealers for display in monitors and in the ALLQ screen and to let users in the source dealer identify their own prices in the screen. To do this, the broker would send a FirmID along with the prices. Bloomberg users that belong to the given FirmID will see the update appear in the monitor in yellow characters and a green background while users that belong to other firmids will see the update appear in the monitor in the standard colors (amber characters and a black background). This lets the broker maintain the source of the prices in the screen anonymous while indicating to the source dealer users that the prices are theirs. The parameters for this sub are:

SecurityId:

This is the actual identifier of the security for which you want to send the price.

Value:

This is the actual number/price you want to send.

TransactionType:

This field defines what the number in the value field represents. The most common transaction types are "Bid", "Ask", "BidSize", "AskSize", "BidYield", and "AskYield" for a complete list of transaction types, please refer to Table 1.

SecurityType:

This field specifies the feed's slot you will be using to send prices to Bloomberg. This parameter could take the values "Bond" for the Fixed Income slot, "Forex" for the Currency

slot, or "Oddbond" for the Oddbond slot. Your Bloomberg representative will tell you what Slot you should use.

SecurityIdType:

This is the identifier type used in the SecurityId field. In this case, you should spell out the identifier type in upper case (i.e. "CUSIP", "ISIN", "VALOREN", etc)

FirmId:

This is a number provided by your Bloomberg representative that indicates from what dealer the update is coming. This is intended for inter-dealer brokers that may be sending prices from multiple dealers to Bloomberg and want users on the source dealer to be able to identify the prices in the screen as theirs. Your Bloomberg representative will give you the list of firmids for the dealers from which you will be sending prices.

CondCode:

This field defines special condition codes for the transaction in question. For instance, if you want to clear your current day pricing in Bloomberg you can send a Value of zero for the transaction you mean to clear and a condition code of "Clear". If no condition code is sent with the zero, Bloomberg will assume the zero is the current valid price and appear in functions like QR, QRM, GIP etc. for a complete list of transaction types, please refer to Table 1.

MarketStatus:

This field should be left empty as it is reserved for future development.

DateAndTime:

This field should be left empty as it is reserved for future development.

Precision:

This field specifies the number of decimal places sent.

ForceThrough:

This Boolean field defines whether the update should be sent even if the data being published is not different from what is already displayed in the Bloomberg monitor. If this field is set to True, the update will flow through even if it is a duplicate update.

Return Value

None. On failure this method will throw a System.Runtime.InteropServices.COMException that will provide the specific error code.

Example Code 1

Sub SendDigitalPrice2()

```
Dim session As PriceLink.PriceLinkSession  
Set session = New PriceLink.PriceLinkSession
```

```
session.ContributeMPF "MRBS2", "0", "BID", "FOREX", "TICKER", "Clear", , , 4, True
```

End Sub

Contribute Historical Digital Data – Sub ContributeHistory

Sub ContributeHistory(ApplId As String, SecurityId As String, Value As String, TransactionType As String, DateAndTime As String, RecType As String, SecurityIdType As String)

ContributeHistory allows you to send past-dated digital prices to Bloomberg for display in monitors and in the HP screen. Your feed needs to be especially configured to accept updates using this call. Please discuss with your Bloomberg representative before attempting to use this sub. The parameters for this sub are:

ApplId:

This field defines the type of update being sent. To send past-dated data, this parameter should take the value "RETR01".

SecurityId:

This is the actual identifier of the security for which you want to send the price.

Value:

This is the actual number/price you want to send.

TransactionType:

This field defines what the number in the value field represents. The most common transaction types are "Bid", "Ask", "BidSize", "AskSize", "BidYield", and "AskYield" for a complete list of transaction types, please refer to Table 1.

DateAndTime:

This field specifies the date for the update. The date should be a string of text in the "mm/dd/yyyy" format (i.e. 12/31/2007)

RecType (SecurityType):

This field specifies the feed's slot you will be using to send prices to Bloomberg. This parameter could take the values "Bond" for the Fixed Income slot, "Forex" for the Currency slot, or "Oddbond" for the Oddbond slot. Your Bloomberg representative will tell you what slot you should use.

SecurityIdType:

This is the identifier type used in the SecurityId field. In this case, you should spell out the identifier type in upper case (i.e. "TICKER", "CUSIP", "ISIN", etc)

ForceThrough:

This Boolean field defines whether the update should be sent even if the data being published is not different from what is already displayed in the Bloomberg monitor. If this field is set to True, the update will flow through even if it is a duplicate update.

Return Value

None. On failure this method will throw a System.Runtime.InteropServices.COMException that will provide the specific error code.

Example Code :

Sub SendHistoryPrice()

Dim session As PriceLink.PriceLinkSession

Set session = New PriceLink.PriceLinkSession

session.ContributeHistory "RETR01", "MRBS3", "-114", "BID", "04/05/2012", "FOREX", "TICKER"

End Sub

Maintaining the List of Instruments in a Monitor

Digital pricing sent to Bloomberg can be displayed on a "GDCO" monitor. The following relate to the process of loading, updating, and deleting a list of instruments on the monitor. Typical application would be to maintain a list of bonds, adding new issues and removing matured bonds. Note: these relate to the updating of instrument lists only, and have no functionality to send pricing.

The following Pricelink calls are available in the library to maintain the list of instruments in a monitor:

Update Digital Monitor - MonitorBenchmark

1. *Sub MonitorBenchmark(Slot As String, SecurityId As String, AccessType As Long, MonitorId As String, MonitorNumber As Long, PageNumber As Long, LineNumber As Long, LoadIndicator As String, YellowKey As Long, [SecurityShortname As String], [SecurityComment As String], [BenchmarkSecurityId As String], [BenchmarkAccessType As Long], [BenchmarkDescription As String])*
2. *Sub MonitorBenchmarkSortByMaturity(Slot As String, SecurityId As String, AccessType As Long, MonitorId As String, MonitorNumber As Long, LoadIndicator As String, YellowKey As Long, [SecurityShortname As String], [SecurityComment As String], [BenchmarkSecurityId As String], [BenchmarkAccessType As Long], [BenchmarkDescription As String])*

MonitorBenchmark and MonitorBenchmarkSortByMaturity allow you to Add and Delete securities to and from a given monitor. In addition, they allow you to Modify text fields related to those securities such as the Short Name, Comment, and Benchmark Description fields. The MonitorBenchmark sub should be used when you want to specify the page and the row where a particular instrument should appear in a monitor, while the MonitorBenchmarkSortByMaturity sub should be used when you want the list of instruments in the page to be sort by maturity. As a result, the ByMaturity sub uses fewer parameters. The parameters for these subs are:

Slot:

This field specifies the feed's slot you will be using to send monitor updates to Bloomberg. This parameter could take the values "F" for the Fixed Income slot, "C" for the Currency slot, or "O" for the Oddbond slot. Your Bloomberg representative will tell you what slot you should use.

SecurityId:

This is the actual identifier of the security that you want to add, delete, or modify in the monitor.

AccessType:

This is a number that specifies the identifier type in use. The most commonly used access types are 23 for Cusips, 33 for Isins, and 31 for Tickers. For a complete list of access types, please refer to Table 2.

MonitorId:

This is a unique number identifying your Bloomberg Monitor page. Your Bloomberg representative will provide this number to you.

MonitorNumber:

A numeric identifier dedicated to an individual Contributor per Monitor ID. Your Bloomberg representative will provide this number to you.

PageNumber (MonitorBenchmark sub only):

This is the page number, within that monitor, where you want the security to be added to/deleted from.

LineNumber (MonitorBenchmark sub only):

This is the row number, within that page, where you want the security to be added to/deleted from.

LoadIndicator:

This 1-character field indicates what you want to do with the instrument. Use "A" to Add the security, use "D" to delete the security, and use "M" to Modify one of the text fields of a security already loaded in the monitor.

YellowKey:

This field specifies the type of Security or Yellow Key you are contributing.

The most commonly used Yellow Keys are "7" for US government bonds, "8" for any non US Government bonds, and "0" for currency tickers. For a complete list of yellow keys, please refer to Table 3.

SecurityShortName:

This 14-character optional field can be used to send a custom description for the instrument. If you chose not to send data in this field, the monitor will display the standard description of the instrument. In the case of bonds, that standard description is the ticker, coupon, and maturity.

SecurityComment:

This is a 30-character optional text field. This field can be set to display in a monitor in any specific column.

BenchmarkSecurityId:

This is an optional field. If you are quoting in spreads, as opposed to prices or yields, you can use this field to send the actual identifier of the corresponding benchmark security.

BenchmarkAccessType:

This is a number that specifies the identifier type in use. The most commonly used access types are 23 for Cusips, 33 for Isins, and 31 for Tickers. For a complete list of access types, please refer to Table 2. You should only send data in this field if you are sending a BenchmarkSecurityId.

BenchmarkDescription:

This 20-character optional field can be used to send a custom description for the Benchmark. You should only send data in this field if you are sending a BenchmarkSecurityId.

Return Value

None. On failure this method will throw a System.Runtime.InteropServices.COMException that will provide the specific error code.

Example Code 1:

Sub SendSecurityList1()

*Dim session As PriceLink.PriceLinkSession
Set session = New PriceLink.PriceLinkSession*

session.MonitorBenchmark "F", "EF3175512", 23, "2779", 1, 1, 1, "U", 8, "MGS Bonds", ""

End Sub

Example Code 2:

Sub SendSecurityList2()

*Dim session As PriceLink.PriceLinkSession
Set session = New PriceLink.PriceLinkSession*

session.MonitorBenchmarkSortByMaturity "F", "EF3175512", 23, "2779", 1, "U", 8, "MGS Bonds", ""

End Sub

Clear Monitor

3. *ClearMonitor(MonitorId As String, MonitorNumber As Long)*

ClearMonitor allows you to remove all the securities in a monitor with a single action. The parameters for this sub are:

MonitorId:

This is a unique number identifying your Bloomberg Monitor page. Your Bloomberg representative will provide this number to you.

Monitor Number:

A numeric identifier dedicated to an individual Contributor per Monitor ID. Your Bloomberg representative will provide this number to you.

Return Value

None. On failure this method will throw a System.Runtime.InteropServices.COMException that will provide the specific error code.

Example Code:

Sub ClearingMonitor()

Dim session As PriceLink.PriceLinkSession
Set session = New PriceLink.PriceLinkSession

session.ClearMonitor "2779", 1, "BOND"

End Sub

Spike Management

The following Pricelink calls are available in the library for spike management:

1. *AllowSpike(SecurityId As String)*
2. *DropSpike(SecurityId As String)*

These two calls allow you to decide if a spike, as defined in the Pricelink User Configuration application, is sent through or is discarded respectively. For instructions on how to define spike filters in Pricelink, please see the Configuring Spike Filters in Pricelink chapter in the Pricelink Installation & Technical Reference. The only parameter for these subs is:

SecurityId:

This is the actual identifier of the security for which you want the spike allowed through or dropped.

Appendix - Tables

Table 1 – Transaction Types

| |
|------------|
| Bid |
| Ask |
| Trade |
| BidSize |
| AskSize |
| Size |
| BidYield |
| AskYield |
| BidSpread |
| AskSpread |
| BidYldSprd |
| AskYldSprd |
| TradeSprd |
| MidYldSprd |
| BidYldSize |
| AskYldSize |
| Benchmark |

Table 2 - Access Type

| | | | | | |
|----|-------------------|----|----------------|----|--------------------------|
| 01 | CINS | 13 | Danish | 27 | Belgian Loan |
| 02 | Sedol 1 | 14 | Austrian | 28 | UK Epic Code |
| 03 | Sedol 2 | 15 | Luxembourg | 29 | Hong Kong |
| 04 | Euro Clear Number | 16 | Misc. Domestic | 30 | Equity Ticker & Exchange |
| 05 | Cedel | 17 | Norway | 31 | Ticker |
| 06 | Valoren | 18 | Euro Com | 32 | Tokyo Special |
| 07 | Wertpap | 20 | Italy | 33 | New ISIN |
| 08 | ISIN | 21 | Sweden | 35 | TBA Mortgage Security |
| 09 | Japanese | 22 | Japan Company | 99 | Clear Page |
| 10 | French | 23 | CUSIP | | |
| 11 | Belgian | 24 | Spain | | |
| 12 | Dutch | 26 | Singapore | | |

Table 3 - Bloomberg Yellow Keys

| | |
|---|----------|
| 1 | CMDTY |
| 2 | EQUITY |
| 3 | MUNI |
| 4 | PFD |
| 5 | CLIENT |
| 6 | M-MKT |
| 7 | GOVT |
| 8 | CORP |
| 9 | INDEX |
| 0 | CURRENCY |

Table 4 - Slots

| |
|---------|
| BOND |
| ODDBOND |
| FOREX |
| SPECIAL |
| 41-46 |

Table 5 – Condition Codes

| | |
|-------|--|
| Clear | Will indicate a zero update is meant to clear the data |
| Valid | Will indicate a zero update is valid |
| Firm | Will indicate that the quote is firm for trading |



Helpx2

Press the <HELP>
key twice for instant
live assistance.

bloomberg.com

Frankfurt
+49 69 92041 0

Hong Kong
+852 2977 6000

London
+44 20 7330 7500

New York
+1 212 318 2000

San Francisco
+1 415 912 2960

São Paulo
+55 11 3048 4500

Singapore
+65 6212 1000

Sydney
+61 2 9777 8600

Tokyo
+81 3 3201 8900

BLOOMBERG, BLOOMBERG PROFESSIONAL, BLOOMBERG MARKETS, BLOOMBERG NEWS, BLOOMBERG ANYWHERE, BLOOMBERG TRADEBOOK, BLOOMBERG BONDRADER, BLOOMBERG TELEVISION, BLOOMBERG RADIO, BLOOMBERG PRESS and BLOOMBERG.COM are trademarks and service marks of Bloomberg Finance L.P., a Delaware limited partnership, or its subsidiaries. The BLOOMBERG PROFESSIONAL service (the "BPS") is owned and distributed locally by Bloomberg Finance L.P. (BFLP) and its subsidiaries in all jurisdictions other than Argentina, Bermuda, China, India, Japan and Korea (the "BLP Countries"). BFLP is a wholly-owned subsidiary of Bloomberg L.P. ("BLP"). BLP provides BFLP with all global marketing and operational support and service for these products and distributes the BPS either directly or through a non-BFLP subsidiary in the BLP Countries.