

# BERNSTEIN PAIRS

## USER GUIDE

To launch the Bernstein Pairs app type **APPS PAIR <GO>** or search for the Bernstein Pairs app in the Bloomberg app store **APPS <GO>**.

If launching the Bernstein Pairs app for the first time you must be enabled by your trading contact at Bernstein and have an active trading account with Bernstein. Please e-mail [algo@bernstein.com](mailto:algo@bernstein.com) to request the set up.

## BLOTTER

Bernstein Pairs app opens to show the BLOTTER view. Orders loaded into EMSX will be displayed in the top panel, EMSX Orders. To chart the historic performance of a pair select a buy and a sell order and click the **Select Pair** button. Orders must be added to EMSX to be available to view in the Blotter view. Quick order entry is also available from the Analytics view when the parent order is not already loaded into EMSX.

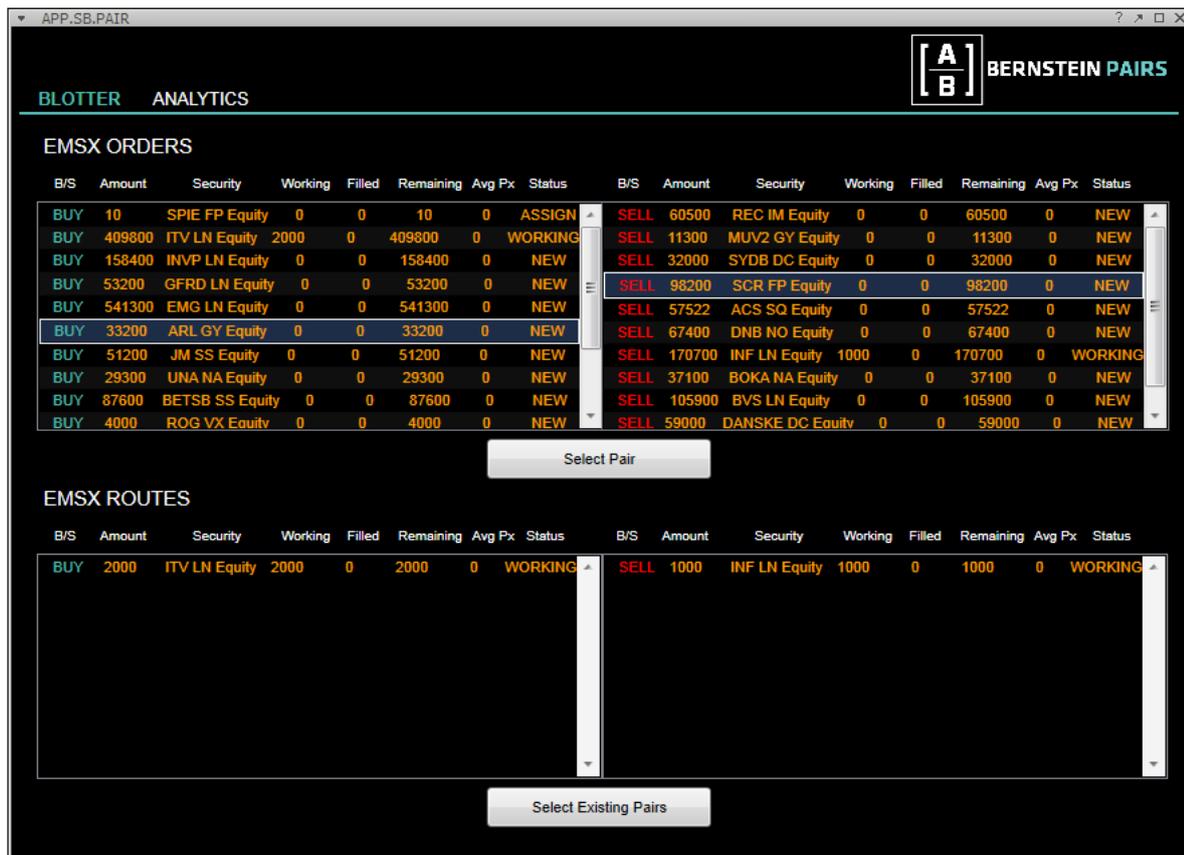


Figure 1 – Blotter View

In the EMSX Orders panel the orders are sorted to show the most recently added orders at the top of the list. Clicking on the **Security** header enables order filtering based on tickers.

Previously routed pairs are shown in the bottom half of the Analytics screen. These can be viewed by highlighting the chosen pair and click **Select Existing Pairs**. Right mouse click functionality allows filled and cancelled orders to be removed from the Blotter view.

## ANALYTICS

Once a pair has been selected the ANALYTICS view will be shown. The chart in the centre of the window shows the historic performance of the two securities selected with the buy order in blue and the sell order in red.

If the markets for both securities are currently open then the intraday performance and spread charts will be displayed. If either of the securities are not actively trading then the charts will be based on historic daily data. The performance charts can be viewed over different periods by adjusting the start and end dates and the data frequency.



Figure 2 – Analytics View

The lower chart shows the performance of the pair spread. The pair spread is calculated based on the **Pair Type** and other parameters selected. Six styles of pair trades are available that include, Ratio, Price Difference and Percentage Change for both regular and merger arbitrage strategies. An

explanation of each pair strategy and relevant parameters are shown in the following pages. If the line on the chart is green it implies the pair would be actively trading if routed to the Bernstein Pairs algorithm. A red line indicates that the Pair strategy would not be active.

Once the Pair strategy and relevant parameters have been chosen it is then possible to route the orders to Bernstein to be traded in the Bernstein Pairs algo. Clicking the **Route To Bernstein** button will trade the orders with the pairs strategy and parameters selected. Before routing it is possible to apply limits or send a reduced number of shares or a percentage of each order.

It is not possible to route more shares than are currently available in your EMSX blotter. Fills and information on value traded are displayed in the Bernstein Pairs app. All fills automatically flow directly into EMSX for more detailed performance monitoring.

**Cancel Routes** will halt the Pair strategy that is currently being viewed. Orders can also be cancelled directly from the EMSX blotter.

## ORDER ENTRY

The **Order Entry** button allows the quick entry of a pair order and should be used when the parent order is not already loaded into EMSX. This button is located at the top of the Analytics view. Entering the quantity of shares or dollar value on one leg of the pair will populate the number of shares on the opposite side of the pair automatically making the trade cash balanced. The quantity of shares can then be amended if cash balanced pair is not required. Shortcuts, **k** for '000 and **m** for '000,000 can be used.

Selecting **Create Pair** will populate the Analytics view with the buy and sell order. The trades will also be added directly into EMSX.

BUY	Side	SELL
BG/ LN EQUITY	Security	RMG LN EQUITY
1	\$ Ratio	2.152612
292628	Quantity	629915
5000003.83	\$ Value	5000007
	Account	
Create Pair	Clear	Close

Figure 3 – Order Entry

# ROUTE EDITING

The **Edit Route** button allows the modification of a live pair that has been routed to Bernstein, this button can be found on the right hand side of the analytics page. A popup form allows the editing of style, participation & pair limit/spread. To change strategies or any other parameters please cancel & re-route the pair.

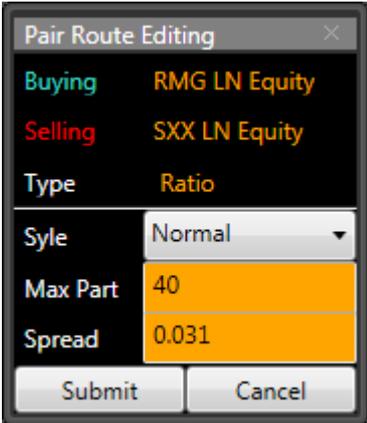


Figure 4 – Route Editing

# MONITOR

When viewing a spread in the Blotter view it is possible to add the current spread chart to the **Pair Monitor**. This is done by clicking the **Add to Pair Monitor** button in the Blotter view. The Pair Monitor enables up to eight pair strategies to be tracked in a separate Launchpad window. Double clicking on a strategy in the Pair Monitor will reload that strategy into the Blotter view. Right mouse click functionality enables individual charts to be removed from the Pair Monitor.

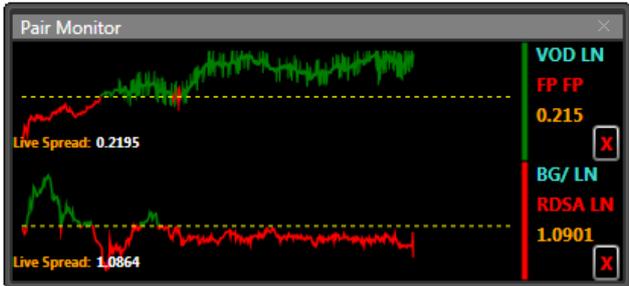


Figure 5 – Pair Monitor

Please contact [algo@bernstein.com](mailto:algo@bernstein.com) if you require any further information.

For full terms of use please refer to the following link.

[http://www.bernsteinresearch.com/CMSObjectBR/Bernstein\\_Pairs\\_Terms\\_of\\_Use.pdf](http://www.bernsteinresearch.com/CMSObjectBR/Bernstein_Pairs_Terms_of_Use.pdf)

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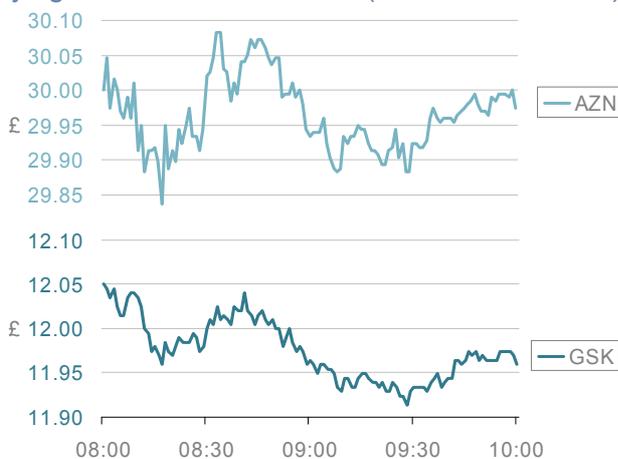


# Pairs

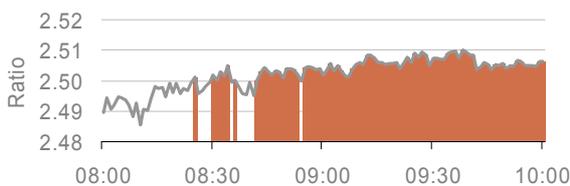
## Two Sided Spread Management

Pairs facilitates the execution of a long and a short position with trading dependant on the spread between the price of the two underlying securities. The pair can be defined by price ratios, price nominal value differences and price relative percentage change versus Previous Close, Open, Strike Price or user defined reference prices.

Example – Selling £6m AstraZeneca (AZN 200k shares) / Buying £6m GlaxoSmithKline (GSK 500k Shares)



1. **Sample Instruction:** Trade when the price ratio AZN/GSK equals or exceeds 2.5

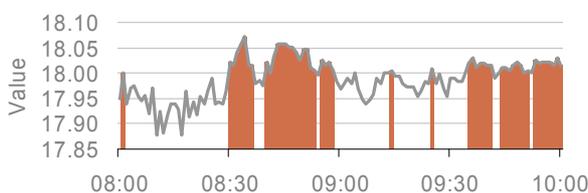


**Pairs Parameters:** Type Ratio, Spread Value 2.5

**Direction** Wind (S/B) = AZN/GSK - Ratio or Better

In this example when the price of AZN is **more than 2.5** times the price of GSK the algorithm will begin trading the order, halting the trade if the ratio falls below that specified

2. **Sample Instruction:** Trade when the price of AZN – GSK equals or exceeds £18.00

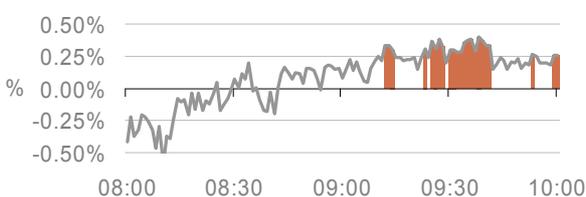


**Pairs Parameters:** Type Dollar, Spread Value 1800

**Direction** Wind (S/B) = AZN-GSK - Ratio or Better

In this example when the price of AZN is **more than £18** above GSK Pairs will become active, Trading will be halted if the spread falls below £18.

3. **Sample Instruction:** Trade when AZN outperforms GSK by 25bps. Using reference prices AZN £30, GSK £12.



**Pairs Parameters:** Type % Change, Spread Value 0.25 Ref

**Px MyRefPrice Buy Ref Px 1200 Sell Ref Px 3000**

**Direction** Wind(S/B) = %Change (AZN – GSK)

Relative to the user defined reference prices if AZN outperforms GSK by **more than 25** basis points then Pairs will become active. It is not necessary to enter reference prices, performance can also be entered relative to the Open, Previous Close or Strike.

## FAQs

Q How do I specify Pairs direction?

A WIND (S/B) will trade at the spread or better  
UNWIND (B/S) will trade at the spread or worse

Q Will Pairs allow for explicit control over cash management within the desired threshold?

A Yes. By default, Pairs will maintain the initial buy / sell cash ratio within constraints, but the user can further customize interaction by specifying a different ratio to execute against.

Q Does Pairs work across multiple currencies?

A Yes. Ratio and Reference Price Pairs will work across multiple currencies. By default the FX ratio is fixed at strike, but a dynamic rate can be used on a per client basis.

Q How aggressive will Pairs be?

A In limit, Pairs will participate up to 50% of the volume. This can be restricted by setting a Maximum Participation Rate or spreading the trade by using VWAP mode.

Source Bernstein

Pairs can be controlled, using the Execution Style parameter, which if set to a more passive setting will increase the level of posting and reduce pressure on the spread. It is also possible to spread the trade OTD by using VWAP mode. In both the default and VWAP mode Pairs will not utilise the auctions. The direction parameter determines if the pair is entered as a Wind trade (Sell/Buy – trade at the spread or better) or Unwind trade (Buy/Sell – trade at the spread or worse).

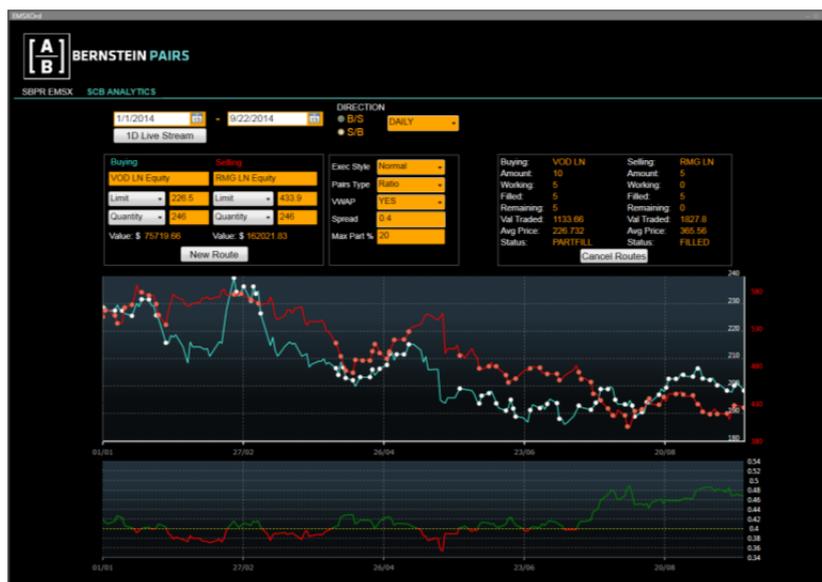
## Pairs Parameters

Parameter	Options	Default	Result
Type	Ratio	blank	Defines the spread as a ratio between buy and sell. <b>Direction and Spread Value</b> must be entered.
	Dollar		Defines the spread as a local currency value.
	% Change		Spread versus the Reference Price benchmark
Direction	Wind		Sell/Buy – Trade at Spread or Better
	Unwind		Buy/Sell – Trade at Spread or Worse
Spread Value	0 to 10,000		Will define the Sell/Buy ratio (for Wind) or Buy/Sell ratio for unwind.
Reference Price	Close		% spread change will be benchmarked against the previous close
	Open		% spread change will be benchmarked against the open
	Strike	Strike	% spread change will be benchmarked against the arrival price
	MyRefPrice		The reference price used for the buy and sell security must be entered manually
Buy Ref Price	0.00 to 1,000,000		Required if the MyRefPrice is used.
Sell Ref Price	0.00 to 1,000,000		Required if the MyRefPrice is used.
Execution Style	Very Passive		Approximate participation rate between 5 and 15%
	Passive		Approximate participation rate between 10 and 30%
	Normal	Normal	Approximate participation rate between 15 and 40%
	Aggressive		Approximate participation rate between 20 and 50%
	Very Aggressive		Approximate participation rate between 35 and 60%
VWAP Style	Yes		Pairs will spread the trade OTD while in limit
	No	No	Pairs will look to complete subject to the Execution Style and Max Part Rate
Max Part Rate	0 to 50		Will constrain the level of at which Pairs participates with market volume
\$ Balance Ratio	0 to 10,000	Trade Ratio Balanced	If the pair is not cash balanced the default is to trade ratio balanced. The ratio traded can be controlled by this parameter.

Source: Bernstein

## Bloomberg Pairs Order Entry via Bernstein Bloomberg App.

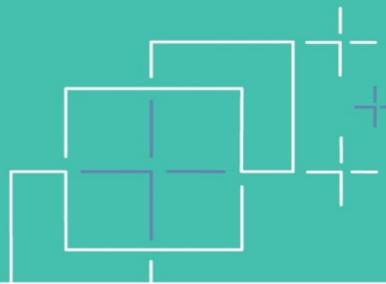
To route a pairs order via Bloomberg EMSX Bernstein has created a custom pairs entry tool.



Source: Bloomberg

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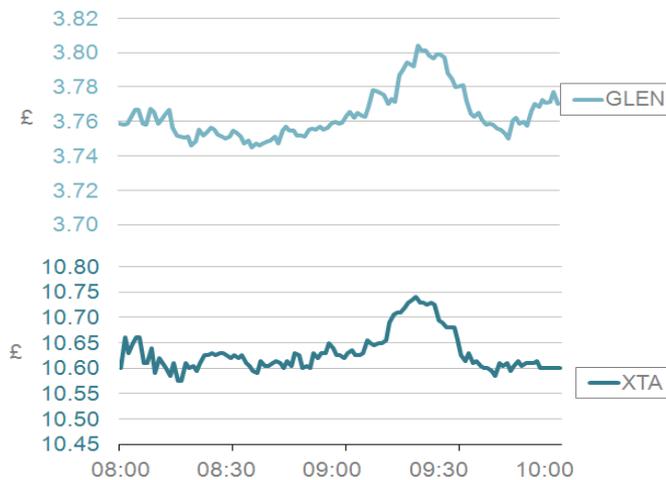
# Merger Arbitrage Pairs

## Two Sided Spread Management

Merger Arbitrage Pairs facilitates the execution of a long and a short position with trading dependant on the spread between the prices of the two underlying securities vs. the price offered in the proposed deal. The deal price can be constructed using both a ratio and cash component, and trading made dependent on the spread, ratio or premium of the deal.

**Example – Buying £6m Xstrata (XTA 560k shares) / Selling £6m Glencore (GLEN 160k Shares). Deal Ratio: 2.9 Deal Cash: 10p.**

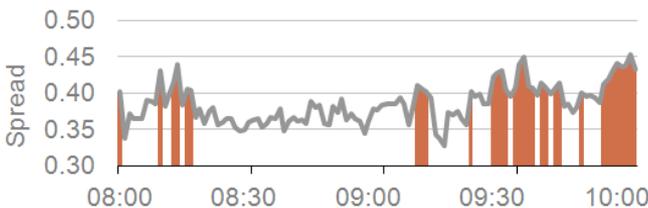
One XTA share will be exchanged for 2.9 GLEN shares + 10p.



## FAQs

- Q** How do I specify Pairs direction?
- A** WIND (S/B) will trade at the spread or better  
UNWIND (B/S) will trade at the spread or worse
  
- Q** Will Pairs allow for explicit control over cash management within the desired threshold?
- A** Yes. By default, Pairs will maintain the initial buy / sell cash ratio within constraints, but the user can further customize interaction by specifying a different ratio to execute against.
  
- Q** Does Pairs work across multiple currencies?
- A** Yes. Pairs will work across multiple currencies but a currency normalisation must be selected if there is a cash component to the deal. By default the FX ratio is fixed at strike, but a dynamic rate can be used on a per client basis.
  
- Q** How aggressive will Pairs be?
- A** In limit, Pairs will participate up to 50% of the volume. This can be restricted by setting a Maximum Participation Rate or spreading the trade by using VWAP mode.

**1. Sample Instruction:** Trade when the spread of the deal vs. current XTA price is greater than or equal to 40p

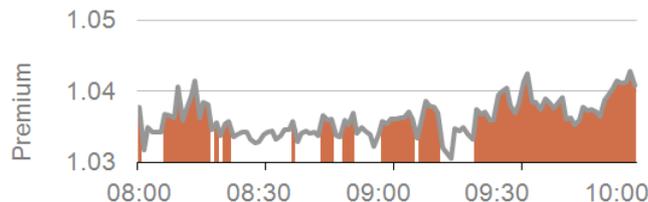


**Pairs Parameters:** *Type* Difference, *Spread Value* 40

**Deal Ratio:** 2.9, **Deal Cash** 10, **Direction** Wind (S/B)

In this example the algorithm will execute when the spread between the post deal value of Xstrata exceeds the current price by 40 pence.

**2. Sample Instruction:** Trade when the ratio of the deal is greater than or equal to 1.035

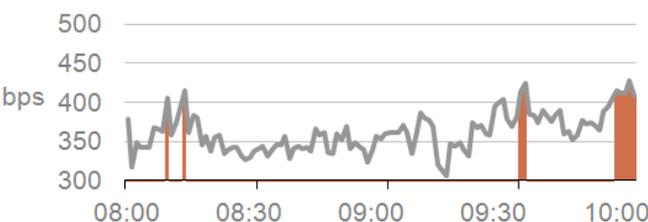


**Pairs Parameters:** *Type* Ratio, *Spread Value* 1.035,

**Deal Ratio** 2.9, **Deal Cash** 10, **Direction** Wind (S/B)

In this example the algorithm will execute when the ratio between the post deal value of Xstrata and the current price of Xstrata exceeds 1.035.

**3. Sample Instruction:** Trade when the premium of the deal is greater than or equal to 405bps



**Pairs Parameters:** *Type* Bps, *Spread Value* 405,

**Deal Ratio** 2.9, **Deal Cash** 10, **Direction** Wind (S/B)

In this example the algorithm will execute when the post deal value of Xstrata exceeds the current price of Xstrata by 405 basis points.

Pairs can be controlled, using the Execution Style parameter, which if set to a more passive setting will increase the level of posting and reduce pressure on the spread. It is also possible to spread the trade OTD by using VWAP mode. In both the default and VWAP mode Pairs will not utilise the auctions. The direction parameter determines if the pair is entered as a Wind trade (Sell/Buy – trade at the spread or better) or Unwind trade (Buy/Sell – trade at the spread or worse).

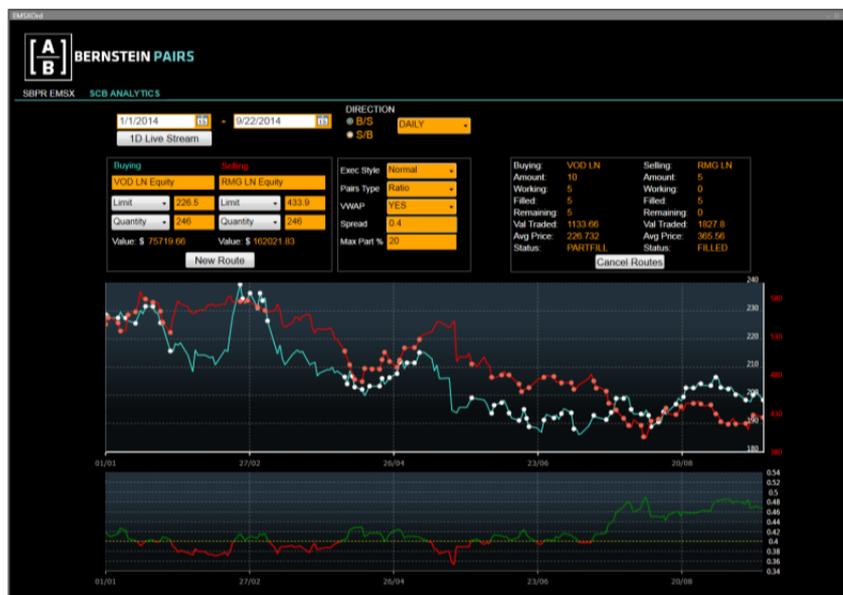
## Pairs Parameters

Parameter	Options	Default	Result
Type	Difference	blank	Defines the spread as a difference between the price of the target shares being offered by the acquirer and their current trading price.
	Ratio		Defines the ratio between the price offered for the target shares vs. their current trading price
	Bps		Is the premium of the share price offered for the target shares vs. their current price expressed in bps
Deal Ratio	0 to 100	Blank	Defines the multiplier of the acquirers share price being offered in the deal
Deal Cash	0 to 1000	Blank	Defined the additional cash component offered by the acquirer for each share
Direction	Wind		Sell/Buy – Trade at Spread or Better
	Unwind		Buy/Sell – Trade at Spread or Worse
Spread Value	0 to 10,000		Will define the Sell/Buy ratio (for Wind) or Buy/Sell ratio for unwind.
Execution Style	Very Passive		Approximate participation rate between 5 and 15%
	Passive		Approximate participation rate between 10 and 30%
	Normal	Normal	Approximate participation rate between 15 and 40%
	Aggressive		Approximate participation rate between 20 and 50%
	Very Aggressive		Approximate participation rate between 35 and 60%
VWAP Style	Yes		Pairs will spread the trade OTD while in limit
	No	No	Pairs will look to complete subject to the Execution Style and Max Part Rate
Max Part Rate	0 to 50		Will constrain the level of at which Pairs participates with market volume
\$ Balance Ratio	0 to 10,000	Trade Ratio Balanced	If the pair is not cash balanced the default is to trade ratio balanced. The ratio traded can be controlled by this parameter.

Source: Bernstein

## Bloomberg Pairs Order Entry via Bernstein Bloomberg App.

To route a pairs order via Bloomberg EMSX Bernstein has created a custom pairs entry tool.



Source: Bloomberg

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