How to Construct Curves in FinPricing?

FinPricing

Curve Construction

The term structure of interest rates, also known as yield curve, is defined as the relationship between the yield-to-maturity on a zero coupon bond and the bond's maturity. Zero yield curves play an essential role in the valuation of all financial products.

The current methodology in capital markets for marking to market securities and derivatives is to estimate and discount future cash flows using rates derived from the appropriate term structure. The yield term structure is increasingly used as the foundation for deriving relative term structures and as a benchmark for pricing and hedging.

Summary

- How to Construct Yield Curve in FinPricing?
- How to Construct FX Forward Curve in FinPricing?

How to Construct Yield Curve?

- Yield curves can be derived from government bonds or LIBOR/swap instruments. The LIBOR/swap term structure offers several advantages over government curves, and is a robust tool for pricing and hedging financial products. Correlations among governments and other fixed-income products have declined, making the swap term structure a more efficient hedging and pricing vehicle.

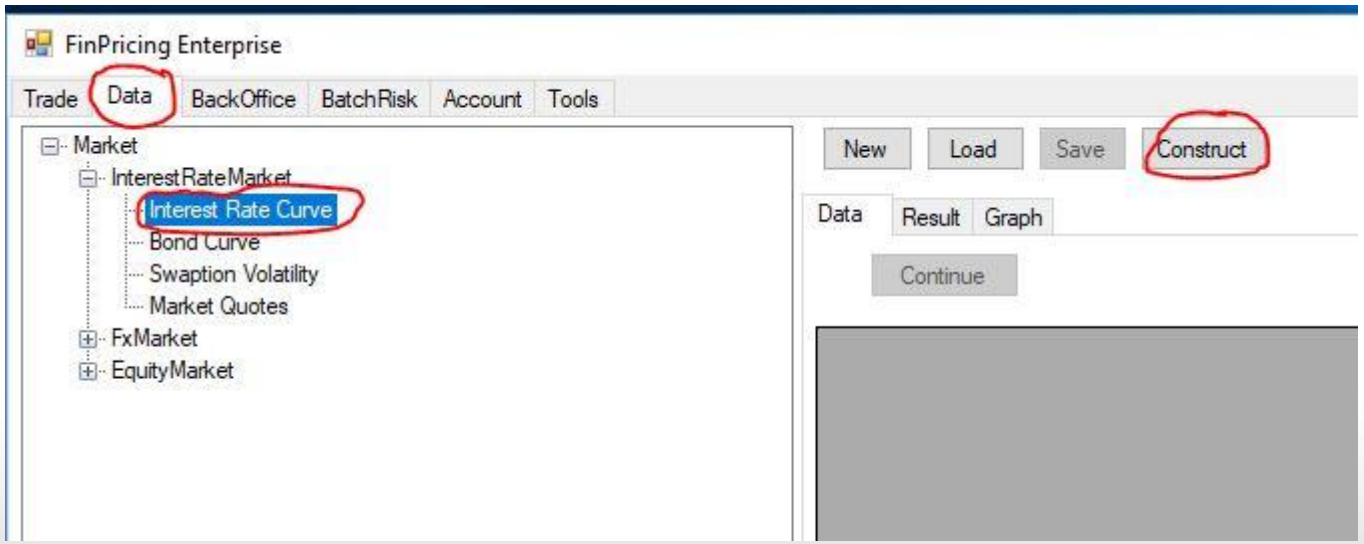
- With the supply of government issues declining, LIBOR/swap markets are more liquid and efficient than government debt markets. The term structure of zero rates is constructed from a set of market quotes of some liquid market instruments such as short term cash instruments, middle term futures or forward rate agreement (FRA), long term swaps and spreads. LIBOR curves have become the funding curves in the market. Among them, the 3 month LIBOR curve is the base yield curve.

How to Construct Yield Curve? (Cont'd)

- Prior to the 2007 financial crisis, financial institutions performed valuation and risk management of any interest rate derivative on a given currency using a single-curve approach. This approach consisted of building a unique curve and using it for both discounting and forecasting cash flows. However, after the financial crisis, basis swap spreads were no longer negligible and the market was characterized by a sort of segmentation. Consequently, market practitioners started to use a new valuation approach referred to as multicurve approach, which is characterized by a unique discounting curve and multiple forecasting curves

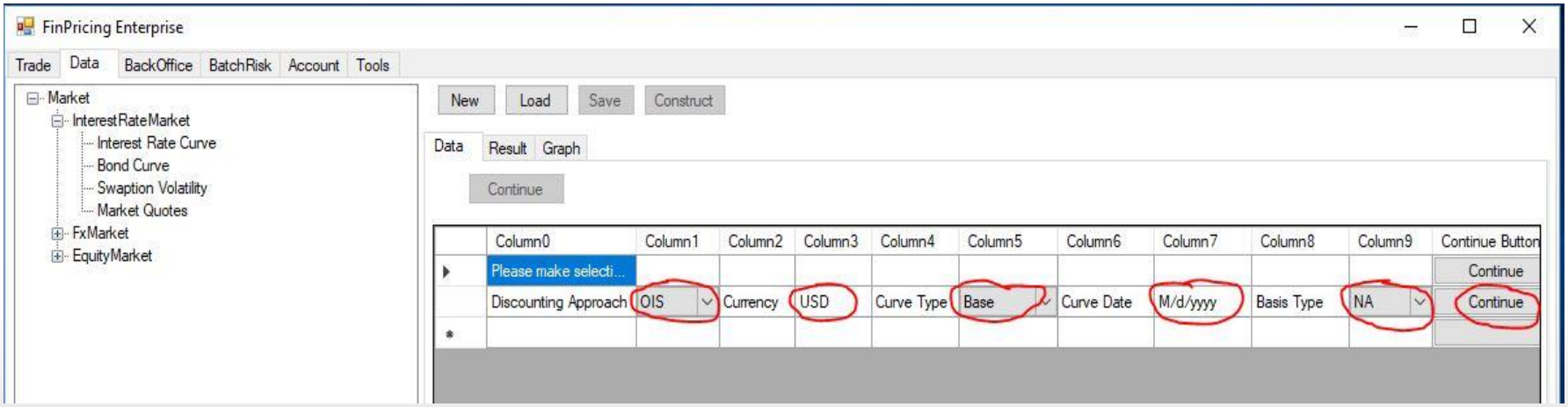
How to Construct Yield Curve? (Cont'd)

- Click the Data tab at the top-left corner of the application. Then, expend Market -> InterestRateMarket -> Interest Rate Curve and click the Construct button.



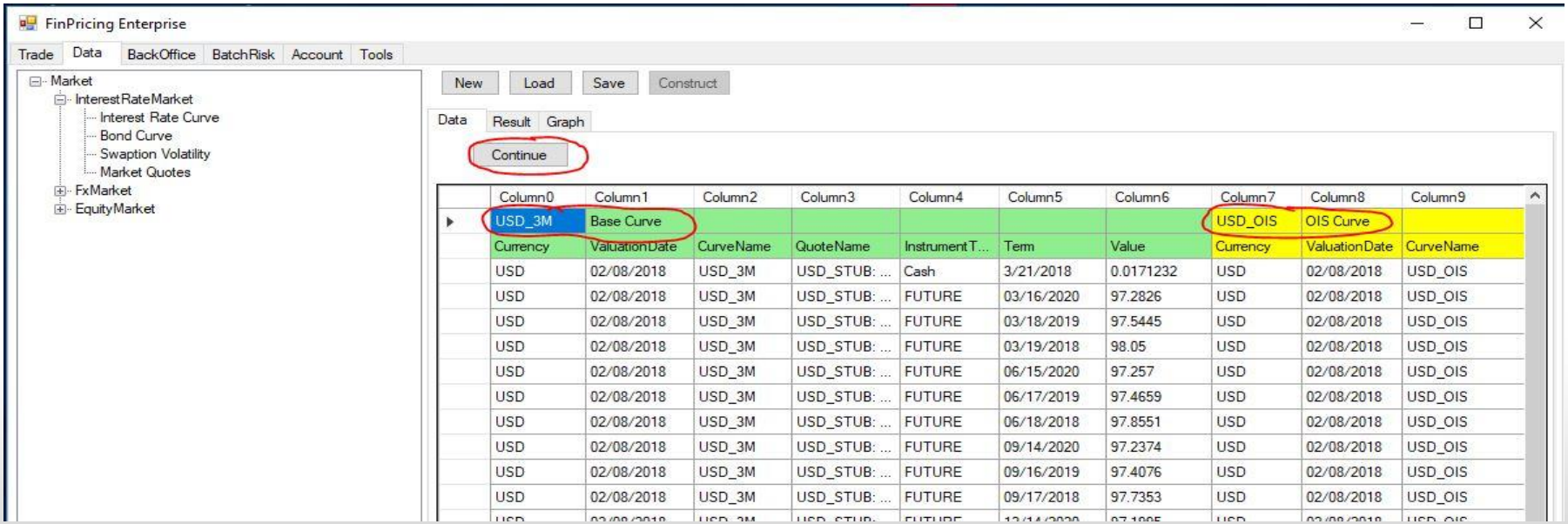
How to Construct Yield Curve? (Cont'd)

- A selection template is displayed in the main window. Select Discounting Approach (e.g., OIS), Curve Type (e.g., Base) and Basis Type (e.g., NA for base curve), fill Currency (e.g., USD), Curve Data (e.g., 2/8/2018) and then click the Continue button at the right of the row.



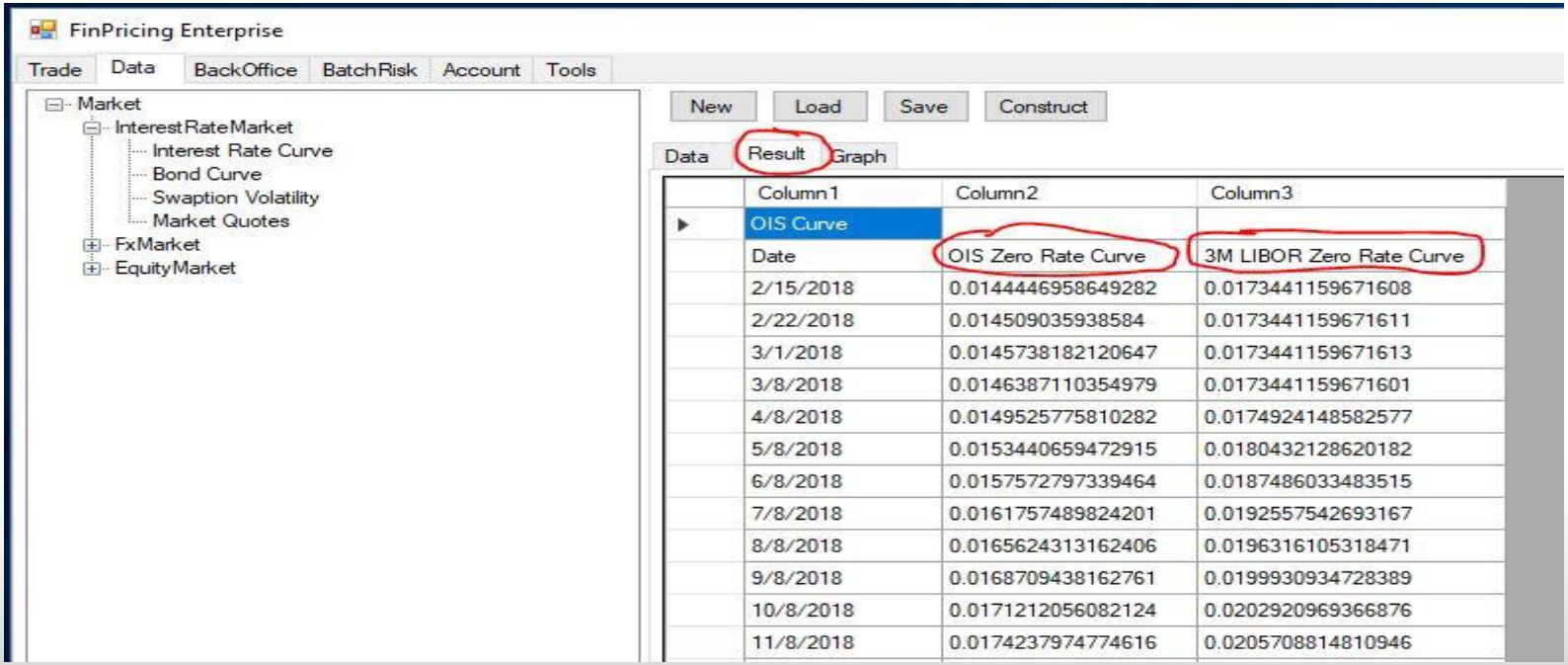
How to Construct Yield Curve? (Cont'd)

- Based on your selection, the system knows what kind of curves needed. So it loads the data in the main window if they are available, otherwise it generates new curve templates in the main window for you to fill. If you fill new curves, you need to click the Save button to save them



How to Construct Yield Curve? (Cont'd)

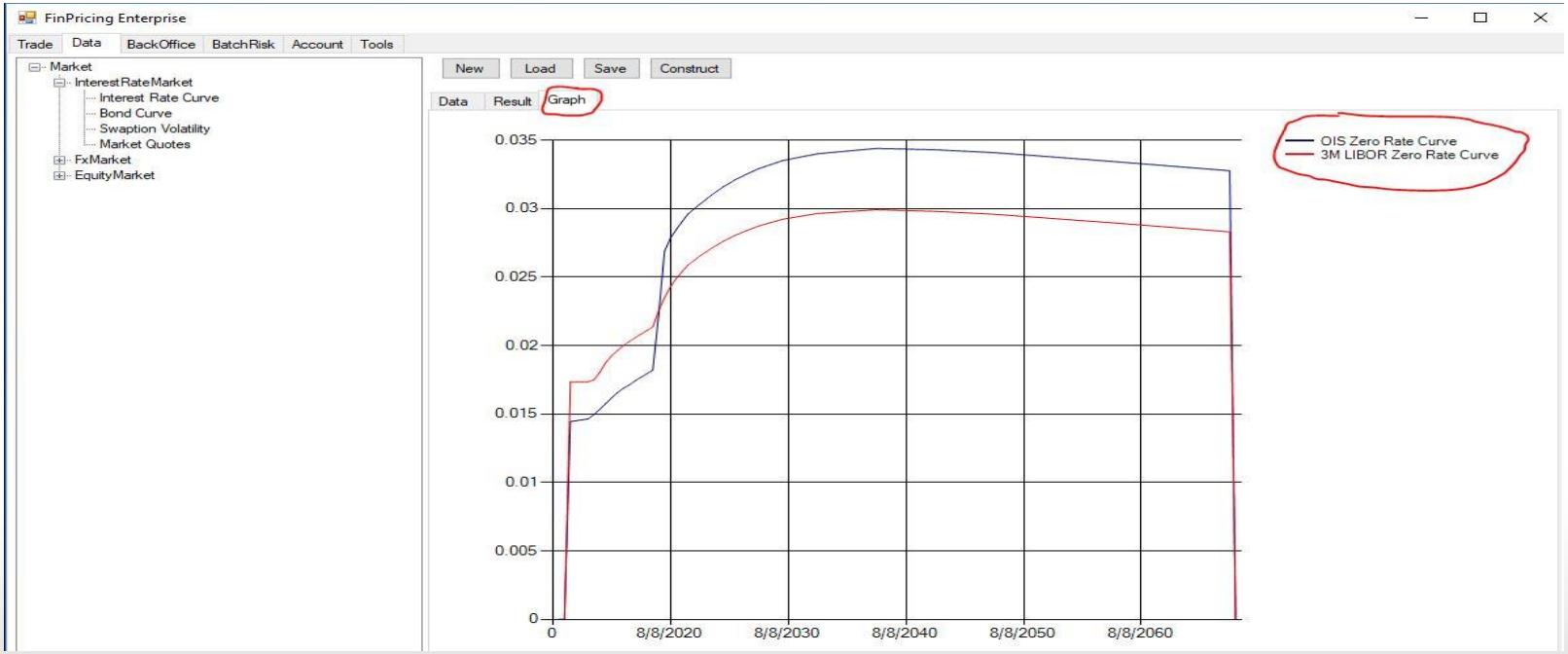
- After filling/validating data, click the Continue button above the main window. FinPricing starts to construct the interest rate curve. The results are shown in the Result tab.



	Column1	Column2	Column3
▶	OIS Curve		
	Date	OIS Zero Rate Curve	3M LIBOR Zero Rate Curve
	2/15/2018	0.0144446958649282	0.0173441159671608
	2/22/2018	0.014509035938584	0.0173441159671611
	3/1/2018	0.0145738182120647	0.0173441159671613
	3/8/2018	0.0146387110354979	0.0173441159671601
	4/8/2018	0.0149525775810282	0.0174924148582577
	5/8/2018	0.0153440659472915	0.0180432128620182
	6/8/2018	0.0157572797339464	0.0187486033483515
	7/8/2018	0.0161757489824201	0.0192557542693167
	8/8/2018	0.0165624313162406	0.0196316105318471
	9/8/2018	0.0168709438162761	0.0199930934728389
	10/8/2018	0.0171212056082124	0.0202920969366876
	11/8/2018	0.0174237974774616	0.0205708814810946

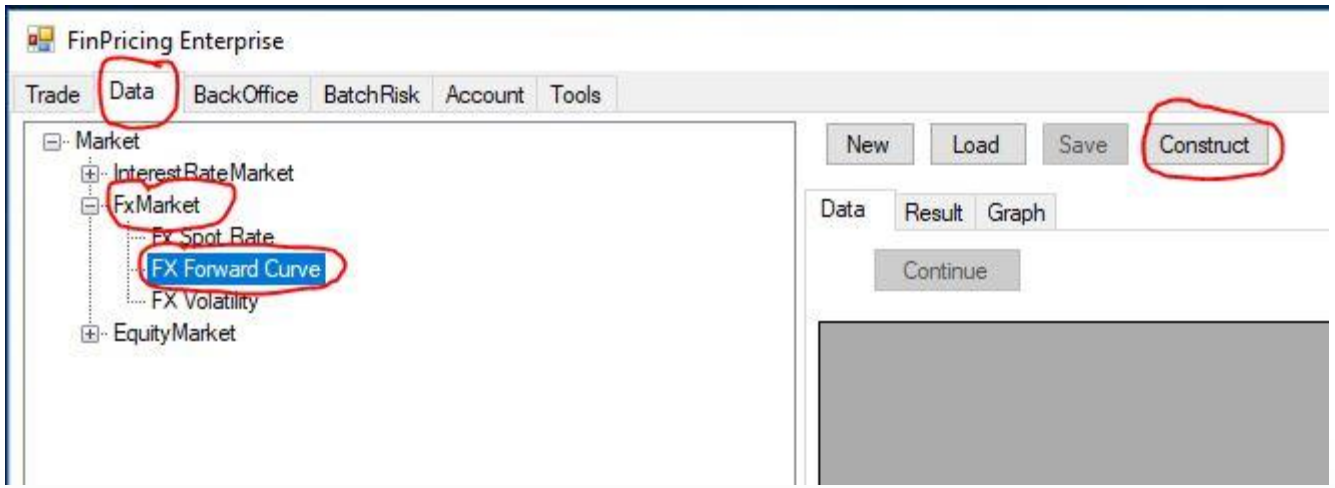
How to Construct Yield Curve? (Cont'd)

- Based on the results above, a more visually intuitive yield curve graph is provided in the Graph tab.



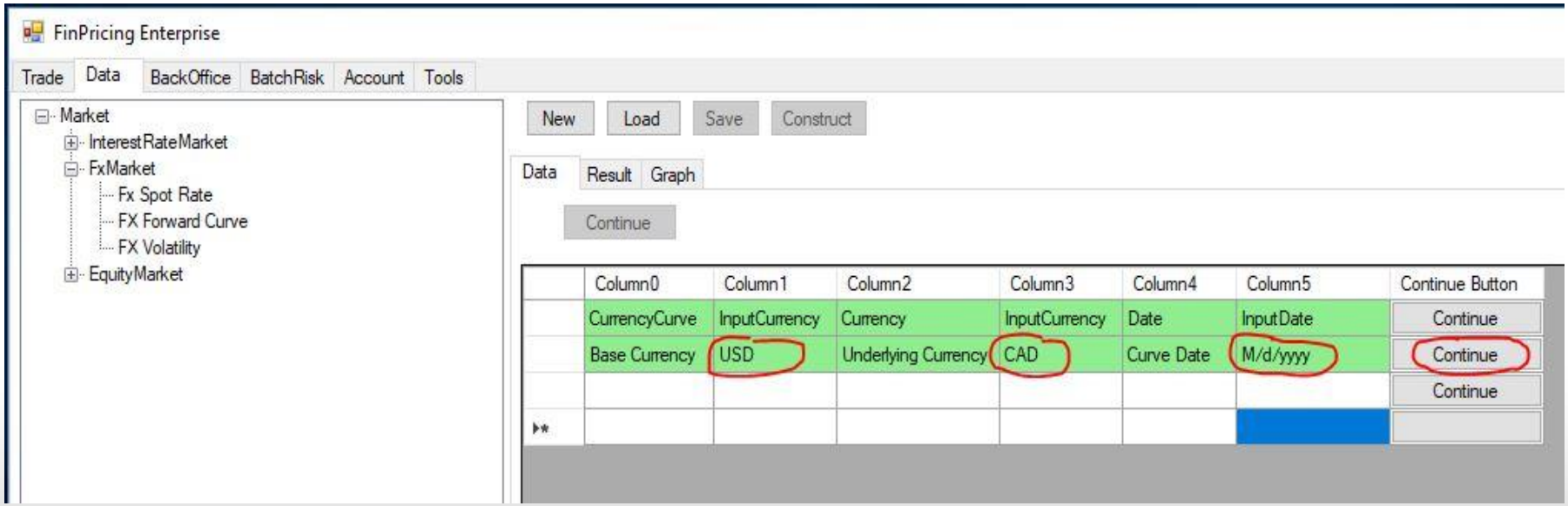
How to Construct FX Forward Curve?

- Click the Data tab at the top-left corner of the application. Then, expend Market -> FxMarket -> FX Forward Curve and click the Construct button.



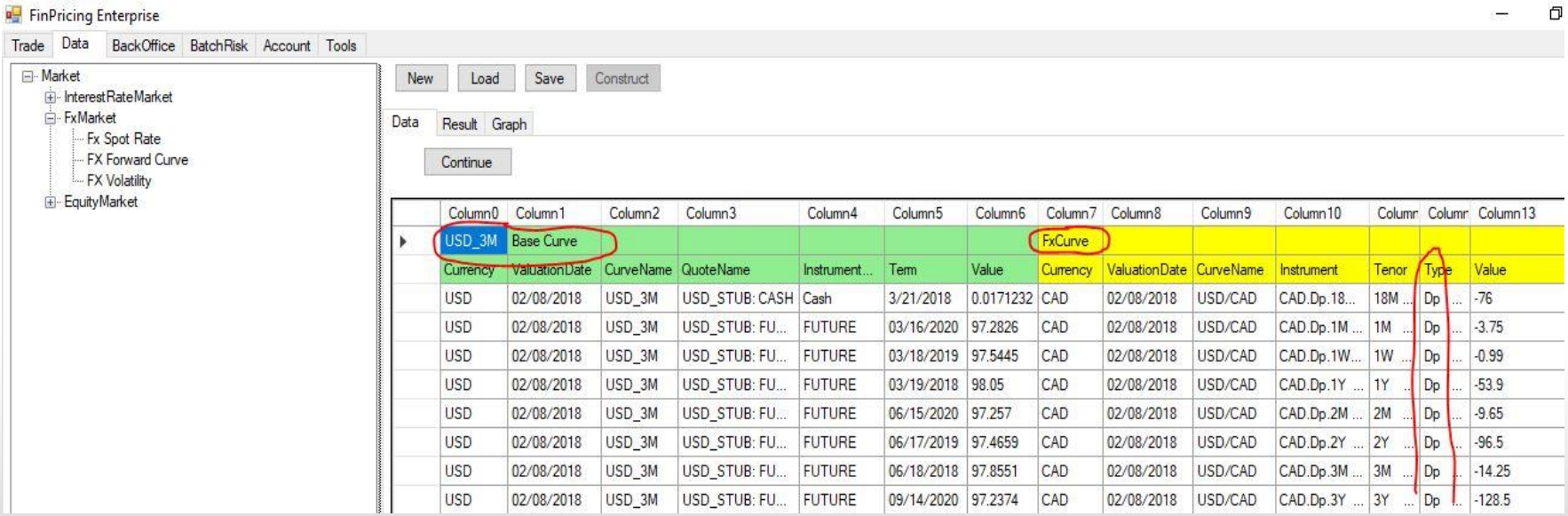
How to Construct FX Forward Curve? (Cont'd)

- Click the Data tab at the top-left corner of the application. Then, expend Market -> FxMarket -> FX Forward Curve and click the Construct button.



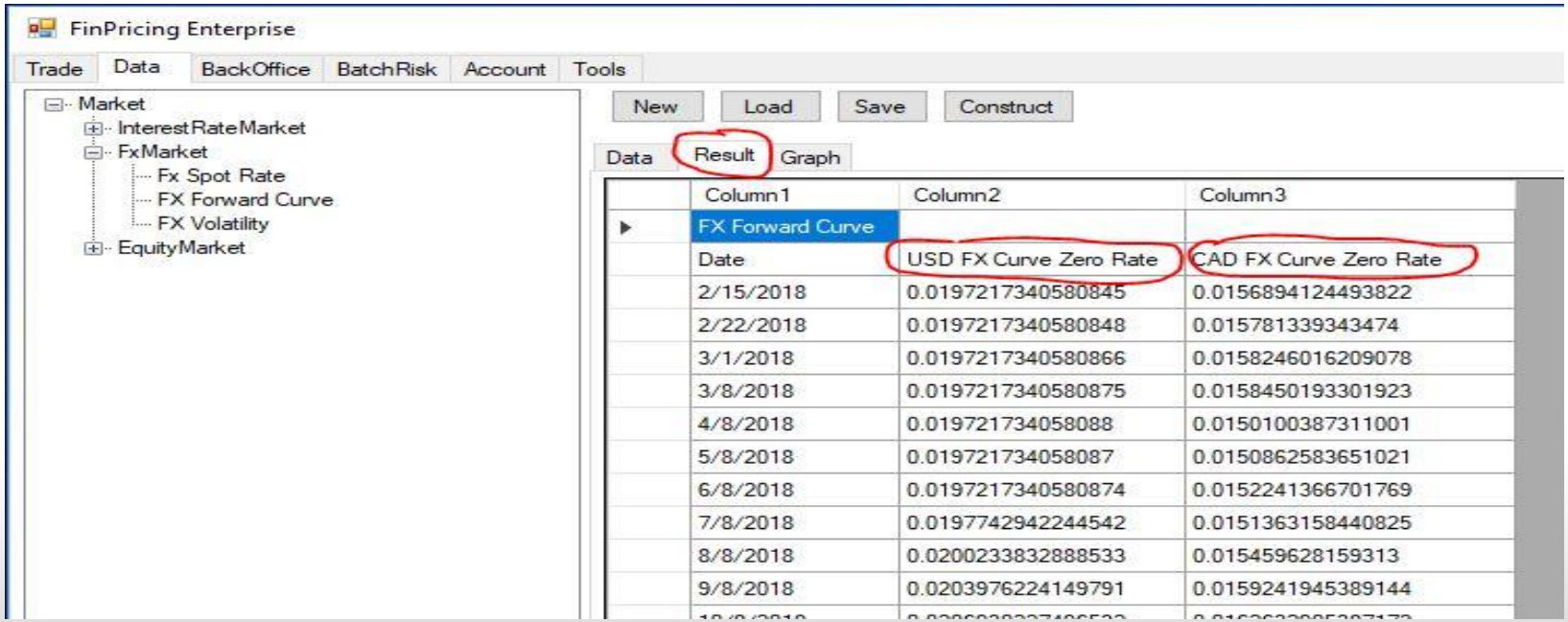
How to Construct FX Forward Curve? (Cont'd)

- Based on your fillings, the system knows what kind of curves needed. So it loads the curve data in the main window if they are available, otherwise it generates new curve templates in the main window for you to fill. If you fill new curves, you need to click the Save button to save them.



How to Construct FX Forward Curve? (Cont'd)

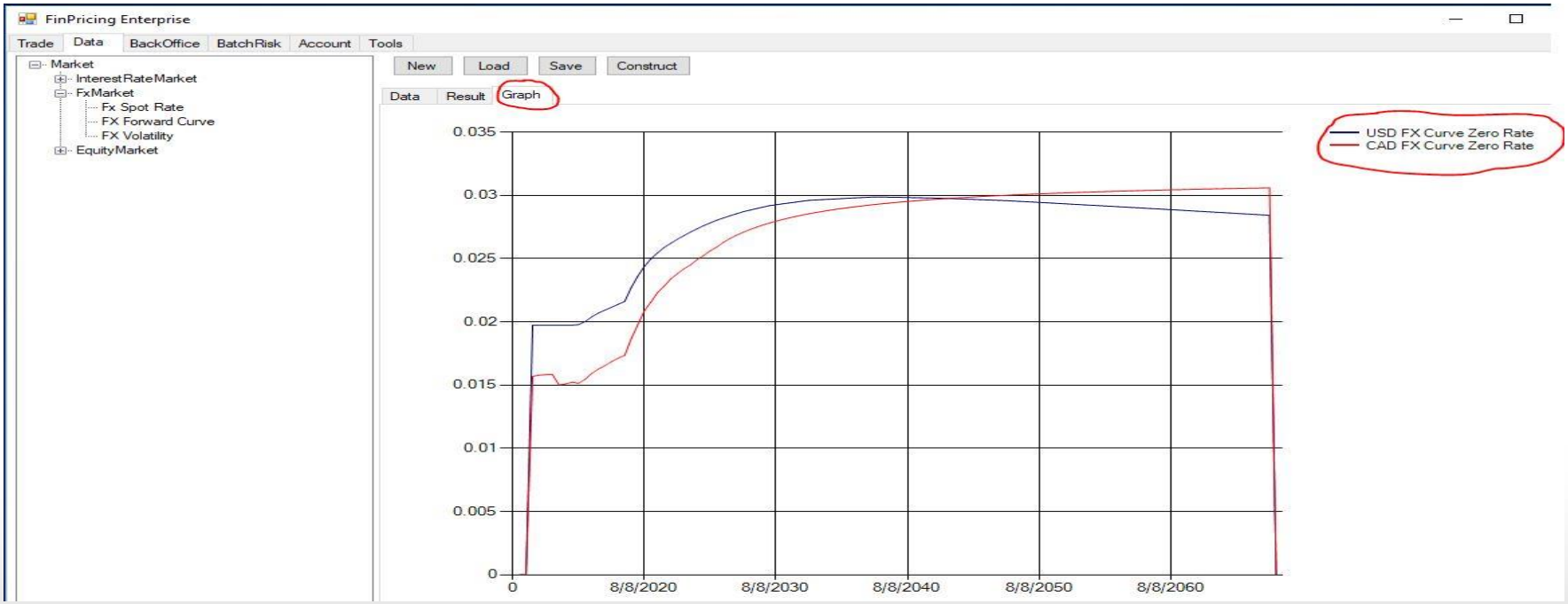
- After filling/validating data, click the Continue button above the main window. FinPricing starts to construct the FX forward curve. The results are shown in the Result tab.



	Column1	Column2	Column3
▶	FX Forward Curve		
	Date	USD FX Curve Zero Rate	CAD FX Curve Zero Rate
	2/15/2018	0.0197217340580845	0.0156894124493822
	2/22/2018	0.0197217340580848	0.015781339343474
	3/1/2018	0.0197217340580866	0.0158246016209078
	3/8/2018	0.0197217340580875	0.0158450193301923
	4/8/2018	0.019721734058088	0.0150100387311001
	5/8/2018	0.019721734058087	0.0150862583651021
	6/8/2018	0.0197217340580874	0.0152241366701769
	7/8/2018	0.0197742942244542	0.0151363158440825
	8/8/2018	0.0200233832888533	0.015459628159313
	9/8/2018	0.0203976224149791	0.0159241945389144

How to Construct FX Forward Curve? (Cont'd)

- Based on the results above, a more visually intuitive currency forward curve graph is provided in the Graph tab..



Thank You

You can find more details at
https://finpricing.com/lib/EqRainbow.html