**Notes for using ZpmPriceCharts with SchwabApiCS**

**ZpmPriceCharts**

ZpmPriceChart class the base price chart user control. It is just the chart itself, along with studies. It requires a CandleSet object to draw. This class is independent of SchwabApiCS (not dependent on SchwabApiCS).

See example in Price\_Chart.xaml.cs – Reload()

PriceChart1.Draw(ZpmPriceCharts.PriceChart.ChartType.CandleStick, cs);

Note – only CandleStick is supported at this time.

**SchwabApiCS\_WPF Price\_Chart class**

This class is a wrapper around ZpmPriceChart, providing a symbol textbox for use input, and price history options (like date range and time frame.

**SchwabApiTest\MainWindow**

An implementation of Price\_Chart is in MainWindow.

MainWindow.xaml has:

xmlns:uc="clr-namespace:SchwabApiCS\_WPF;assembly=SchwabApiCS\_WPF"

<uc:Price\_Chart x:Name="PriceChart1" Height="600" MinHeight="600" Margin="0,-4,0,0"

Padding="0,0,0,0"></uc:Price\_Chart>

MainWindow.xaml.cs has:

PriceChart1.schwabApi = schwabApi; // set the api Price\_Chart will use.

**SchwabApiCS\_WPF\Price\_Chart**

Price\_Chart.xaml has:

xmlns:uc="clr-namespace:ZpmPriceCharts;assembly=ZpmPriceCharts"

<uc:PriceChart x:Name="PriceChart1" Height="600" MinHeight="600" Margin="0,-4,0,0"

Padding="0,0,0,0"></uc:PriceChart>

Price\_Chart.xaml.cs

* PriceChart1.AddStudy() adds desired studies to the price chart.
* Reload() is called whenever the chart needs to be refreshed to reload current pricing, change of symbol, or price history parameters.

**ZpmPriceCharts**

ZpmPriceCharts\PriceChart.xaml

ZpmPriceCharts\PriceChart.xaml.cs

FYI - CandleSet – PrependCandles – what are they?

PrependCandles are the number of candles to prepend to the requested price history start date. It is needed for most studies to “normalize” the results. PriceChart will ignore prepended candles when displaying the chart. For example, a daily SMA(14) needs 13 days prior to correctly calculate the simple moving average value. For SMA(200), PrependCandles should be set to 200. ADX needs 2 to 3 times the periods to normalize. This value is calculated from the studies included on the chart.

**Studies**

When studies were tested, results were compared to thinkorswim and are very close, if not the same.

**Short List of enhancements I will be working on**

* Add a chart settings pop-up, much like thinkorswim, where timeframe is selected and date range, and include after hours candles. This replaces the “Period” combo box. Right now the Price\_Chart Reload() is hard coded to show one year.
* Add support for Month, 1 minute, 30 minute and 1 hours time frames.

**Other enhancements I will be working on**

* Live price chart option – use chart streaming API to update price chart real time