Pair Strength Analyzer (PSA)

This is an indicator that I used as an adjunct to my strength indicators, to confirm strength/weakness by using a very different algorithm. I've finally decided to share it publicly. There is nothing magical about it; it is merely another way of calculating trend strength, and — as always — the question is whether the trend (on your chosen timeframe/horizon) remains effective, on average, for long enough for you to profit from it. The indicator ranks currencies, from the strongest trending down to the most sideways moving, according to the parameter settings that you decide to apply.

The indicator was written and compiled using MT4 build 509. I can't say for sure that it will work correctly on builds later than 600.

TERMS AND CONDITIONS

Please note that all code in this thread is supplied FREE of charge. Therefore the following conditions apply:

1. You agree that, if you download and use the code, it is **ENTIRELY AT YOUR OWN RISK**. I accept **NO LIABILITY** for any financial losses or computer related damage, caused by either the correct or incorrect use of the code.

2. Feel welcome to share the code freely, and modify any MQ4 source. However, you may **NOT** sell, or otherwise distribute, **any part of the code** commercially, without my prior written consent.

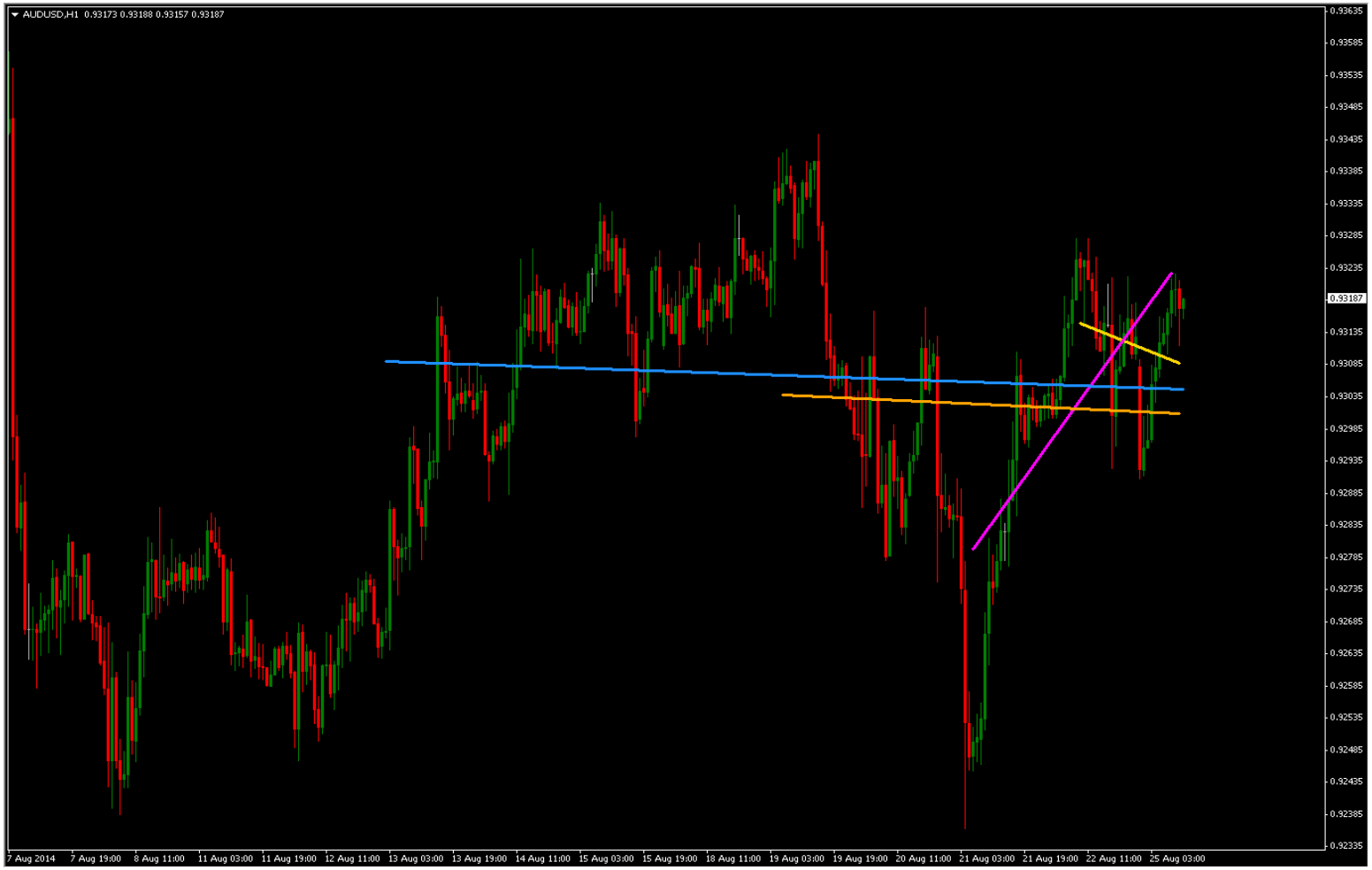
3. The code may not run correctly on Windows 7, Windows 8 or Vista, probably for the reasons given here:
http://4xtrader.net/how-to-run-metatrader-on-windows-7-or-vista/

4. I'm sorry, but due to my current work commitments, **I am no longer modifying code to suit people's personal requirements, nor posting replies to individual questions in this thread**. (If you can't get the code to work, you may find solutions already posted somewhere in the thread; otherwise, you'll need to find another indicator).

METHODOLOGY

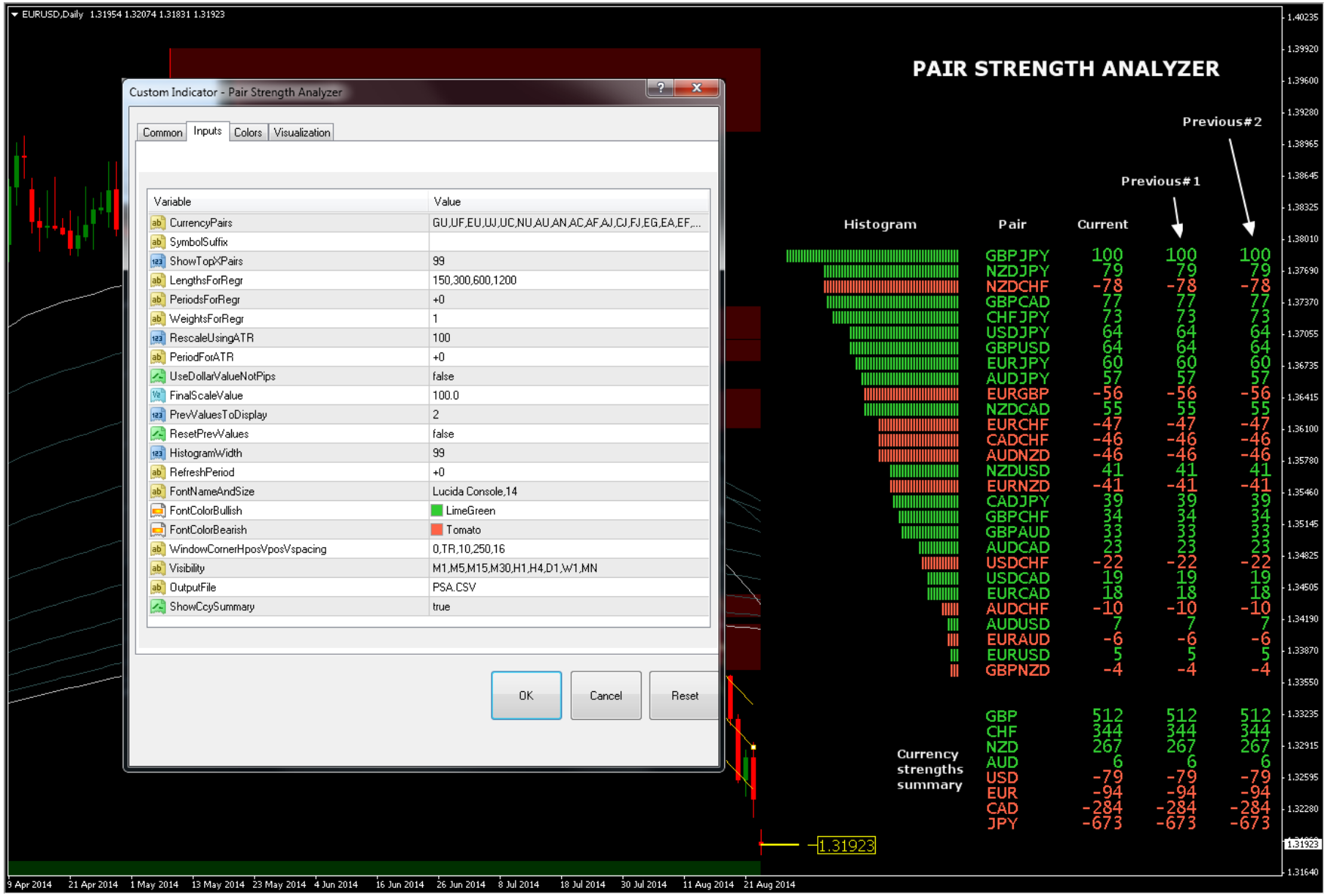
PSA determines trend strength by calculating a weighted average of the slopes of a number of (invisible) regression lines. In each of the screenshots below, I have manually plotted 4 regression lines of different lengths: 25 candle (yellow), 50 candle (magenta), 100 candle (orange) and 200 candle (blue).

In the following screenshot (AUDUSD, H1), both AUD and USD are strong, i.e. positively correlated, resulting in a sideways or ‘trendless’ chart. The directions/slopes of the 4 regression lines are conflicting and scattered, and averaging their slopes will result in a low summary value (close to zero), as the directions cancel each other.



In the next screenshot (USDJPY,H1), USD is strong and JPY weak, i.e. negative correlation, resulting in a strongly uptrending chart. The directions/slopes of the 4 regression lines are all pointing upward, and averaging their slopes will result in a high positive summary value, as the directions reinforce each other.

(Conversely, in a strongly downtrending chart, the directions of the regression lines would all point downward, and averaging their slopes would result in a high negative summary value).


EURUSD,Daily 1.31954 1.32074 1.31831 1.31923
Custom Indicator - Pair Strength Analyzer
Common
Inputs
Colors
Visualization
Variable
Value
CurrencyPairs
GU,UF,EU,UJ,UC,NU,AU,AN,AC,AF,AJ,CJ,FJ,EG,EA,EF,...
SymbolSuffix
ShowTopXPairs
99
LengthsForRegr
150,300,600,1200
PeriodsForRegr
+0
WeightsForRegr
1
RescaleUsingATR
100
PeriodForATR
+0
UseDollarValueNotPips
false
FinalScaleValue
100.0
PrevValuesToDisplay
2
ResetPrevValues
false
HistogramWidth
99
RefreshPeriod
+0
FontNameAndSize
Lucida Console,14
FontColorBullish
LimeGreen
FontColorBearish
Tomato
WindowCornerHposVposVspacing
0,TR,10,250,16
Visibility
M1,M5,M15,M30,H1,H4,D1,W1,MN
OutputFile
PSA.CSV
ShowCcySummary
true
OK
Cancel
Reset
PAIR STRENGTH ANALYZER
Previous#2
Previous#1
Histogram
Pair
Current
GBPJPY 100 100 100
NZDJPY 79 79 79
NZDCHF -78 -78 -78
GBPCAD 77 77 77
CHFJPY 73 73 73
USDJPY 64 64 64
GBPUSD 64 64 64
EURJPY 60 60 60
AUDJPY 57 57 57
EURGBP -56 -56 -56
NZDCAD 55 55 55
EURCHF -47 -47 -47
CADCHF -46 -46 -46
AUDNZD -46 -46 -46
NZDUSD 41 41 41
EURNZD -41 -41 -41
CADJPY 39 39 39
GBPCHF 34 34 34
GBPAUD 33 33 33
AUDCAD 23 23 23
USDCHF -22 -22 -22
USDCAD 19 19 19
EURCAD 18 18 18
AUDCHF -10 -10 -10
AUDUSD 7 7 7
EURAUD -6 -6 -6
EURUSD 5 5 5
GBPNZD -4 -4 -4
Currency strengths summary
GBP 512 512 512
CHF 344 344 344
NZD 267 267 267
AUD 6 6 6
USD -79 -79 -79
EUR -94 -94 -94
CAD -284 -284 -284
JPY -673 -673 -673
1.31923
9 Apr 2014
21 Apr 2014
1 May 2014
13 May 2014
23 May 2014
4 Jun 2014
16 Jun 2014
26 Jun 2014
8 Jul 2014
18 Jul 2014
30 Jul 2014
11 Aug 2014
21 Aug 2014

PARAMETERS

`extern string  CurrencyPairs  =`
`"GU,UF,EU,UJ,UC,NU,AU,AN,AC,AF,AJ,CJ,FJ,EG,EA,EF,EJ,EN,EC,GF,GA,GC,GJ,GN,NJ,NC,CF,NF";`
Enter up to 99 currency pair symbols, or abbreviations, separated by commas. In typing the symbol, upper/lowercase may be used interchangeably (e.g. USD or usd). Permissible abbreviations are: A=AUD; C=CAD; E=EUR; F=CHF; G=GBP; J=JPY; N=NZD; U=USD; H=HKD; S=SGD; Z=ZAR. So you could type G or g instead of GBP, for example. If the currency name typed is not exactly 1 character, the abbreviation will not be recognized.
You can include metals like XAUUSD or XAGUSD in the list. However, depending on how your br0ker prices these, you may need to use the *RescaleUsingATR* parameter to standardize the result with the currencies.

`extern string  SymbolSuffix  = "";`
Use this if your br0ker uses symbols like USDJPYm (in which case you would type m here). The suffix you enter will be appended to all symbols you entered in *CurrencyPairs*. Otherwise simply leave the setting blank.

`extern int  ShowTopXPairs  = 99;`
This is the number of strongest trending pairs that you want to be displayed. Leaving the default of 99 means that all pairs will be displayed.

`extern string  LengthsForRegr  = "5,10,20,50,125,250,500";`
These are the lengths (number of candles, counting back from the rightmost candle) of the regression lines whose slopes will be averaged. You may make up to 50 entries here, separated by commas. The default setting means that the average slope of 7 regression lines will be used, of length 5,10,20,50,125,250,500. If you wish to add weight to a particular length, type its number multiple times (e.g. typing it twice gives it double the weight, three times triple the weight, and so on).

By having several different regressions of similar length (e.g. 5,10,15,20,25,30,35,40), the summary value displayed by the indicator will factor in the smoothness (consistency), as well as the overall strength, of the trend.

`extern string  PeriodsForRegr  = "+0";`
You can also have the regression lines repeat themselves over multiple timeframes. You can either enter timeframes as relative to the current chart, separated by commas, i.e. +0 is the current timeframe (**note: be sure to type the + sign**), +1 is the next longer timeframe, +2 is the next longer timeframe after that, etc; –1 is the next shorter timeframe, –2 is the next shorter timeframe, etc. For example, if you're on a H1 chart, and you enter –1,+0,+1, then the slope of 21 regression lines would be averaged, i.e. lines of length 5,10,20,50,125,250,500 on each of the M30, H1 and H4 timeframes. But then if you were to switch to the M15 chart, the slopes of lines of length 5,10,20,50,125,250,500 on each of the M5, M15 and M30 timeframes would all be averaged. Alternatively, you can enter absolute timeframes like H1, H4, D1 (upper or lowercase). Then these timeframes will used no matter what the timeframe of the currently displayed chart is, i.e. they remain 'locked' if you switch timeframes.

`extern string  WeightsForRegr  = "1";`
This allows you to specify different weights for each of the corresponding timeframes in *PeriodsForRegr*. For example, if *PeriodsForRegr* is H1, H4 and *WeightsForRegr* is 3,1 then the H1 regression slopes will be weighted 3 times as highly as the H4 regression slopes, when the overall averaging is performed.

The *PeriodsForRegr* and *WeightsForRegr* allow you to create a summary of each pair's strength, into a single value, weighted over any or all of the 9 timeframes available in MT4 (M1,M5,M15,M30,H1,H4,D1,W1,MN), however you wish.

```
extern string  RescaleUsingATR                = "100,+0";
```
You can re-scale all of the averaged values by entering a positive (>0) value into the first of the two settings, which will be the period of the ATR (MT4's built-in average true range function) used. For example, if you use the default value of 100, then each slope value will be divided by a 100 period ATR, before they are summed and averaged. This ensures standardization of different units, e.g. pips, points, across different instrument types (currencies, metals, etc).
The second entry is the timeframe that will be used in the ATR calculation. You can enter either a relative or absolute value, exactly for *PeriodsForRegr*. Hence if you were to enter **20,D1** then each slope value would be divided by the pair's 20 day ATR before being passed to the averaging process.
The two entries must be separated by a comma.
If you leave the entire parameter blank, then no re-scaling will be performed, i.e. the 'raw' value of each slope will be used in the averaging process.

```
extern bool    UseDollarValueNotPips          = false;
```
If set to TRUE, this will cause all of the slope values to be multiplied by the 'dollar per pip' ('tickvalue' in MT4 terminology) before the averaging process takes place. Hence the end result will compare dollar values rather than pips. To make this meaningful, this assumes that you have set *RescaleUsingATR* to 0.
If set to FALSE, the raw pip based slop values are passed on to the averaging process.

```
extern double  FinalScaleValue                = 100;
```
After the weighted averages (summary values) for each pair have been calculated, you can further have these scaled so that the strongest trending pair has a value of 100, and then all other pair's summary values are ratioed down accordingly. Arguably keeps things neat, especially if you are making comparisons of different instances of the indicator with different regression settings.

```
extern int     PrevValuesToDisplay            = 0;
extern bool    ResetPrevValues                = false;
```
In addition to the indicator plotting the current summary values, you can also have the indicator plot up to 2 prior historical values (the summary values are recalculated and redisplayed periodically, according to the *RefreshPeriod* setting). *PrevValuesToDisplay* may have a value of 0, 1 or 2, depending on how many prior values you wish to display, each in a separate column. For example, if the *RefreshPeriod* is M30, then every 30 minutes the previous#2 value disappears, the previous#1 value becomes the new previous#2 value, the current value becomes the new previous#1 value, and a new current value is calculated, as the new M30 candle forms. The current and prior values are all stored in Global Variables, which means that they should remain 'sticky' if MT4 is re-started. If you want to reset all prior values to their current values, set *ResetPrevValues* to TRUE.

```
extern int     HistogramWidth                 = 0;
```
The indicator can also plot a histogram of the summary values. Enter a value between 10 and 60 to set the maximum width (number of bars). To disable the plotting of the histogram, set *HistogramWidth* to 0.

```
extern string  RefreshPeriod                  = "+0";
```
This controls how often the summary values are recalculated and redisplayed. You can enter either a relative or absolute timeframe, as previously explained in *PeriodsForRegr*.

```
extern string  FontNameAndSize                = "Lucida Console,14";
```
Type the name of the font (you must get the spelling exactly correct, for Windows to recognize the font) you want to use, in the displaying of the summary values; then a comma; then the font size you wish to be used.

extern color FontColorBullish = LimeGreen;
If the average slope is greater than 0, then the currency is deemed to be in an uptrend, and the positive summary value will be displayed using the color you select here. Trend traders should be looking to place buy orders, according to their entry rules.

extern color FontColorBearish = Tomato;
If the average slope is less than 0, then the currency is deemed to be in an downtrend, and the negative summary value will be displayed using the color you select here. Trend traders should be looking to place sell orders, according to their entry rules.

extern string WindowCornerHposVposVspacing = "0,TR,10,250,16";
These entries control where the summary table will be displayed on the chart, and its format. You must enter 5 values, separated by commas.
First value is the (sub)window in which you want the values to be displayed. 0 is the main price chart, 1 is the first sub-window below that, 2 is the next sub-window, etc.
Second value is the corner: enter either TL (top left), TR (top right), BL (bottom left), BR (bottom right).
Third value is the starting horizontal pixel number.
Fourth value is the starting vertical pixel number.
Fifth value is the vertical spacing (number of pixels) between each displayed entry (instrument). With a font size of 14, a spacing of 16 allows a small gap (16–14=2) between each row.

extern string Visibility = "M1,M5,M15,M30,H1,H4,D1,W1,MN";
This controls which timeframe charts the summary will be displayed on. Enter valid values (M1, M5, etc) separated by commas.

extern string OutputFile = "PSA.CSV";
The indicator can output the same summary that's displayed on screen to a text file. The file could then be read by an EA, and the EA make decisions on which pairs to trade, based on the pair strength values in the file.
If you enter any non-blank text, that will be the name of the file that will be created in MT4's *Files* folder. The file gets overwritten with new values, every time the on-screen values are updated, which is determined by the *RefreshPeriod*.
You can include the tokens [sym] [tf] and/or [dt] in your entry. These will automatically insert the symbol id, timeframe and/or MT4 date/time into the filename at that point. For example, using "PSA\PSA_[sym][dt].CSV" will create files named like "PSA_USDCAD_2014-10-31_23-45-01.CSV"in a subfolder named "\PSA\"
If you leave the entire parameter setting blank, then no file will be created.

extern int HistoricalShift = 0;
This setting will display the values as they were *HistoricalShift* bars ago, for each regression plot. However, it should be left at the default value (0) if you have multiple entries in *PeriodsForRegr*, as the indicator will calculate values for regression plots *HistoricalShift* bars ago in each timeframe, e.g. if *HistoricalShift* is set to 5, and *PeriodsForRegr* is set to H1,H4, then the situation 5 bars ago on the H1 timeframe will not be the same situation 5 bars ago on the H4 timeframe, hence values that are out-of-synch with each other will be averaged.

extern bool ShowCcySummary = true;
The indicator can also produce a summary of the currencies, which it does by averaging all of the summary values displayed for the pairs. Set this parameter to TRUE to have this summary displayed, or FALSE to disable it.

====== END OF DOCUMENT ======