

PROBLEMS AND SOLUTIONS for range, mom, kase, renko bars:

1. "Session start bar resets" solves the problem of different data on chart reload or first bar date/time, else the "continuous" data in the range or mom or kase chart is dependent on the first bar on the chart, as everything else computes from there, but if data is reset on session breaks (as normally done) then integrity through the session is maintained, ie data is same within session starting from days open tick through days closing tick, for forex use 24 marker as reset point... data then can be safely kept in TS cache with not need to recompile the bars from FIRST BAR IN THE CHART each time you create a new chart... Otherwise, if we take the example of current range bar implementation with no bar resets on new session, all range bar data becomes dependent on the first bar loaded into the chart, ie if you change first date in chart then first bar changes and that changes the whole range bar data series going forward, this is substandard implementation, data can't be kept in cache because it's dependent on first bar in the chart... historical data has to be recomputed each time data interval is 'days in chart' is rolled forward since first bar in the chart is changing each time you roll the dates forward. In comparison to that if you reset range, mom, kase, renko bars on each session start - i.e. start compiling data from new session start, then all problems automatically go away: historical data is same for all days in chart as it's not dependent on first day of chart, you can safely store data in cache and reuse it in the future without having to recompile it, real time and historical data will always match, end of day exits will always work, open and close session ticks are maintained, it's then easier to show session breaks. I have no idea who at TS came up with the idea of having continuity in range or momentum data from session to session, that one idea introduced the whole series of problems... NEEDS TO BE RECODED.

2. "Bar ending criteria" concept solves the problem of forward data snooping and data inconsistencies, you build the bar until your bar ending condition fires, then you start building new bar, how complicated is that? You can then code whatever simple or complicated bar ending conditions in TS and the rest of the bar building algo becomes simple, you simply continue compiling bars until bar ending criteria fires and which point you start building new bar going forward.

Bar ending criteria for different types of bars:

time bars: if bar duration \geq N minutes or seconds or milliseconds then end_bar = true

tick bars: if N ticks in bar \geq N then end_bar = true

volume bars: if bar Volume \geq N then end_bar = true

range (and variation mom and kase) bars: if Range = High - Low of the bar \geq X then end_bar = true

renko bars (various version o-c or c-c[1]) bars: if o-c of the bar \geq X then end_bar = true

ANY TYPE OF BARS: if "bar ending criteria" \geq Z then end_bar = true

Thus who cares what type of bar it is: you can build a framework for any type of bar where you just plug in any bar ending criteria (simple or complex) and it will build the bar based on that...

3. 1 MIN RESOLUTION:

Who came out with the concept of more than 1 tick base resolution for those bars? These types of bars must be compiled from tick data else you will get problems, that's just not a good idea to use 1min or no tick resolution to build those bars, the obvious problems are historical data mismatch due to inaccuracies in 1 min data, false synthetic data due to lower than tick resolution, false trades, etc... Who came out with that concept? GET RID OF 1 min resolution, only use 1 tick, even if point values are high and data span is long (several hundred days) still must use 1 tick data, it will increase data compilation times for range, momentum, kase and renko bars, but so what...is the reason to use 1 min resolution to cut down on processing time ? that's just a bad idea, in trading data must be precise... trade is trigger by a single tick, false tick will trigger false trade, tick resolution ensures that data is pure and precise.

4. VIRTUAL BARS AND GAPS:

It's always the best and simplest policy to keep data 'real' with all its artifacts instead of trying to fill gaps and create synthetic bars to make bars 'look' good which only generate more problems. Again who came out with the idea of virtual bars or filling gaps with virtual bars... I mean in trading data must be pure, you can't introduce synthetic data when you are trying to automate execution of the strategy, you know that introducing synthetic (non real data) is potentially same problems as introducing bad ticks into the data... That's just a bad idea! GET RID of all synthetic data in range, mom, kase, renko (and any future) bar types , this ensures data integrity, simplifies bar building algo and eliminates all potential problems with synthetic data...

5. BAR NAMES AND DEFINITIONS, bars must be renamed properly:

MOMENTUM BARS:

Current momentum bars are not true momentum bars but simply range bars with outside tick criteria, hence just a typical variation of range bars, nothing more and has nothing to do with TA momentum. Where in the wide world did TS get the idea that about momentum bars, the guy who wrote some poor article in some magazine barely related to trading, who's patent bar type does not even match his article bar type, and TS decides to adopt the standard because TS is afraid some guy can go after TS in the future about using the name "momentum" ?

TECHNICAL ANALYSIS DEFINITION OF MOMENTUM = 1 bar momentum = $\text{close} - \text{close}[1]$, 2 bar momentum = $\text{close} - \text{close}[2]$, N bar momentum = $\text{sum}(\text{close} - \text{close}[1], \text{over } N)$ another way to define momentum is to use bar open instead of previous bar close as reference points, ie $\text{close} - \text{open}$ In any case THIS IS the standard TA adopted definition of momentum and just because some guy calls range bars with outside tick - momentum bars and applies for patent does not mean that TS has to automatically follow that substandard. That patent has not chance in the world standing against the TA definition of momentum... thus:

MOMENTUM BARS are bars defined as bar ending criteria $\text{close} - \text{close}[1]$ or $\text{close} - \text{open} = \text{constant}$, period! Just like range bars momentum bars can be build based on outside tick enabled or disable option, ie 2 versions are possible, but they are still 2

version of momentum and 2 versions of range bars. Thus current TS momentum bars are simply range bars with outside tick condition, thus recode the momentum bars per TA.

RANGE BARS:

Bar ending criteria $\text{range} = \text{high} - \text{low} \geq X$, 2 options there again, with and without outside tick. Without outside tick the simplified bar ending criteria $= \text{high} - \text{low} \geq X$, stop building bar on first tick where bar ending criteria is matched with outside tick the simplified bar ending ending criteria $= \text{high} - \text{low} > X$, ie as long as bar range not taken out, keep building bar.

KASE BARS:

Current kase bars are simply range bars with outside tick and with virtual bars... thus a slight variation of range bars. Parameter is not bar range but should be true range, as in her book in the last chapter she computes that parameter based on $\text{DAILY_ATR}(\text{LENGTH})/\text{Sqrt}(N)$ where N is length = how many days you want to compute the ave daily true range and N = how many bars you want to have in your session on average + she is using scaling law sqrt of time (very basic but valid way). Example, 10 Day average day's true range (average daily range over 10 days) = 25 points, $N = 100$ you want about 100 bars on average within the day session, then your TR parameter value $= 25/\text{sqrt}(100) = 2.5p$. Kase bars can also be build with 2 options, with or without the outside tick...

THE WAY IT SHOULD BE:

R - range bars without outside tick - bar ending criteria $R \geq X$

RO - range bars with outside tick - $R > X$

M - momentum bars without outside tick - Momentum $\geq X$

MO - momentum bars with outside tick - Momentum $> X$

K - kase without outside tick - True Range $\geq X$

KO - kas with outside tick - True Range $> X$

RENKO BARS

total of 2 range, 2 mom, 2 kase and 1 renko + other types like line break, etc...

The way it is currently implemented in TS :

Range = R

Momentum = RO

Kase = RO + virtual bars

It's totally messed up... there is no consistency in either names per TA or implementation... it looks like it was done just to match the names to some unique bar type without in depth understanding...

PROPER INPUTS (symbol format box) :

- Since 'outside tick on/off' is common condition to all bars, it should be included as an option in symbol format box, or instead it's possible to hard code it into bar type ie make 2 range bars types R and RO (without and with outside tic),

2 momentum bars (M and MO) , 2 kase bars (K and KO)...

- Get rid of 1 min resolution option, just 1 tick for max precision and real data.
- Get rid of all virtual and synthetic bars, keeping data as is simplifies and gets rid most gap problems and fake trades where non should have been made.

SUMMARY, current implementation of range, mom, kase and renko bars is poor with multiple problems, to fix:

- reset bars on session start, in forex reset on 24h marker: solves several problems, removes data dependency on first bar in chart, allows data to be stored permanently in cache without the need to recompile it each time first bar in chart changes, ensures data integrity within the session, ensures historical data will match real time data, allows easier plotting of session breaks on chart, solves the problem of OED automatic exit.
- recode momentum bars AS PER TECHNICAL ANALYSIS STANDARD and not some inferior made up standard
- recode KASE bars, make input = true range, you then have 3 different bar types range mom and true range (kase)
- remove virtual bars for gap filling, ensures data integrity, ensures data is as is without false synthetic data, solves the problem of false trades due to virtual bars, solves problems where data is polluted with non real data.
- remove 1 min resolution, solves the problem of historical and real time data mismatch, ensures data integrity down to a tick, ensures IOG and LIBB is automatically supported
- adopt "bar ending criteria" concept for building those bars, ensures simplicity in bar building,
- adopt of the concept of "outside or no outside tick" for range, mom and kase bars, either hard code 2 versions per bar type or put check box input on format symbol to allow user to pick either algorithm with outside tick or without the outside tick
- **maybe go 1 step further and allow TS users to code bar ending criteria in EL and thus compile any bar type the user wishes to compile, that would be the major INNOVATIVE FEATURE to have.**

TS does that - it will clean up the mess and solve all problems, puts everything like it should be, clean and consistent and named properly. This like the 5th time I'm writing the same thing to TS.

Regards.