

## **TrendMedium 2.0 – What's New?**

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- 3. The FLEX Analysis Pattern.**
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## ***1. Walk Forward Test***

Walk Forward Test (WFT) is the most effective way to simulate a trading system being used on real data in real time. It answers some very important questions about the trading system:

- a) Will the trading system be profitable after optimization?
- b) How effective will it be on unseen data?
- c) How will the system perform after changes in trend, liquidity and volatility?

WFT lets you verify the forward-trading ability of the system. Now you can tell whether the system will continue to bring profits after optimization or not. If your system is badly optimized then you should expect it to perform poorly during WFT. On the other hand, if the system makes profit over a large number of walk forward tests, it's most likely to be successful in the future.

You can run WFT for a given number of last days and estimate the REAL performance of your trading system on that data. Notice that simulation considers all your settings for the selected analysis pattern.

Here's what happens when WFT is run:

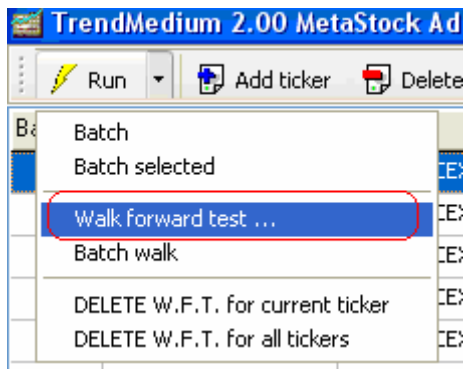
- 1) TrendMedium chooses a starting point as a function of the number of walk-forward days (maximum 30 days in the trial version of TrendMedium) and out-of-sample % you specified.
- 2) Next, it calculates the most profitable trading system on the in-sample data segment.
- 3) The optimal trading system is then applied to the out-of-sample data.
- 4) After that, TrendMedium saves the signals generated by the system for the out-of-sample data for your analysis.
- 5) Next, TrendMedium moves the optimization window forward one day and repeats the steps 2-5 for the specified number of WFT days.

As you can see, it's very close to what you would do with paper trading.

Another feature of WFT is that not only it lets you find the optimal trading system, but also gives you the possibility to change its parameters and see the effects. This way you can compare different values for SUM, MOV ranges, and Calculation Period and choose the most profitable ones.

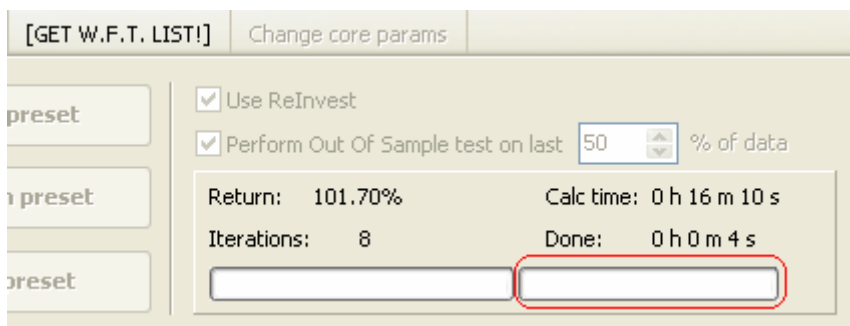
Please note that you can run WFT with the ReInvest feature turned either on or off.

In order to start a WFT, click Run, and then click Walk Forward Test.



You will have to give the number of days (no more than 30 in the trial version) to perform the WFT on.

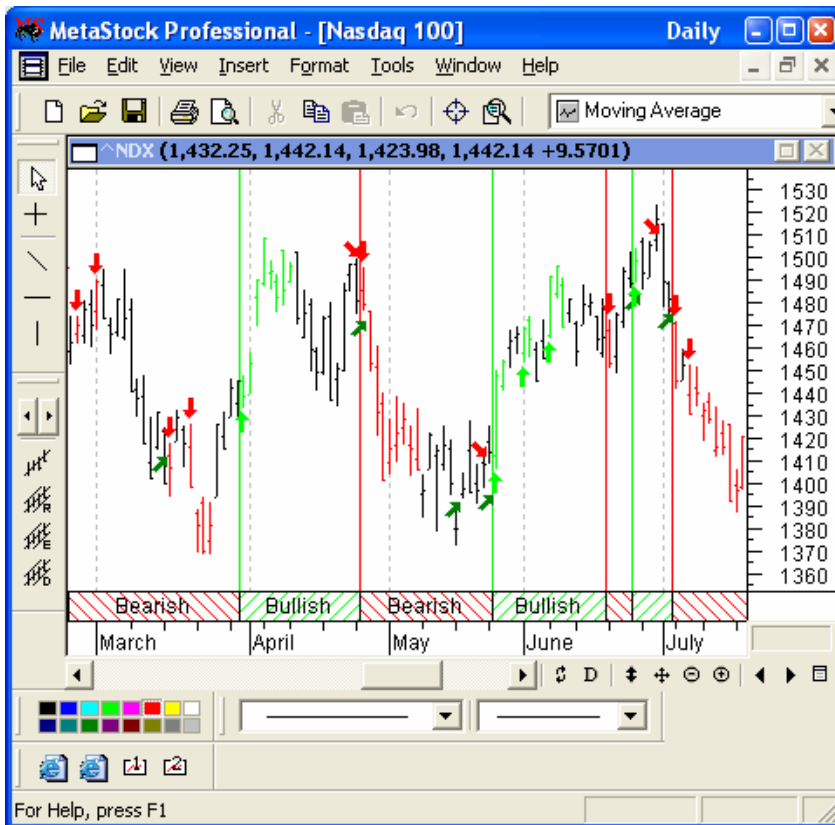
After that, the WFT will start and the progress bar to the right will display its progress:



Once the WFT is complete you can see simulation results with the help of the suitable Expert Adviser. For example, if you performed a WFT for a trading system based on the CO analysis pattern, you should use TrendMedium 2 – CO WFT Expert Adviser.

This will let you see exactly how TrendMedium can work for you.

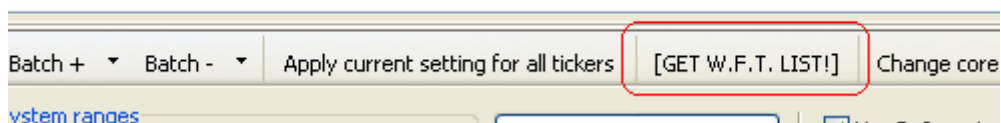
The figure below shows the result of a sample WFT:



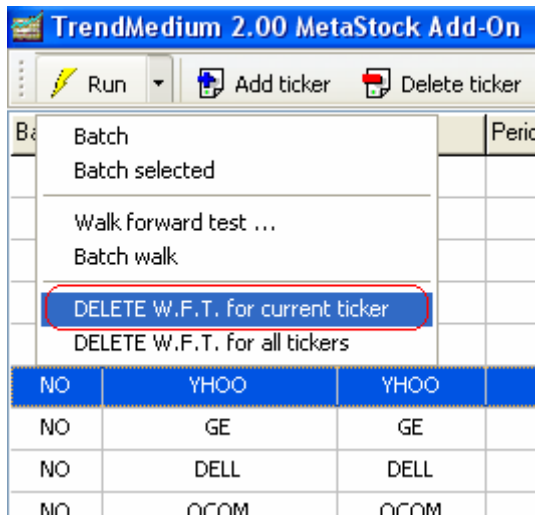
Note the angled arrows. These are trend change signals and appear when the last trading signal still holds, but the trend is changing.

TrendMedium lets you manage your WFT results easily: you can see how many signals you have, delete the current WFT result, and delete all existing WFT results.

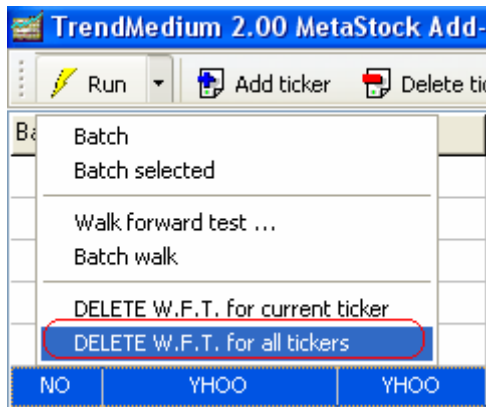
In order to get a detailed list of WFT tickers, simply click the GET W.F.T.LIST button:



If you'd like to remove the WFT results for the current ticker, simply click Run, then click Delete WFT for Current Ticker:



If you want all WFT results removed, click Run, then click Delete WFT for All Tickers and TrendMedium will delete all existing WFT results:

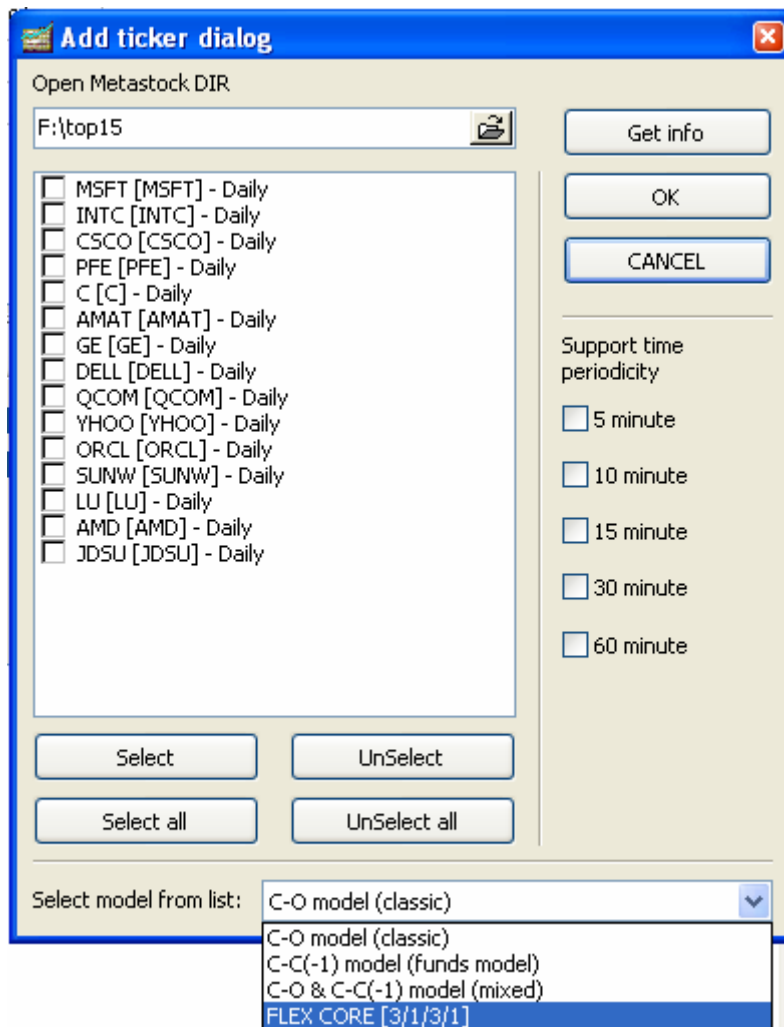


## 2. TrendMedium 2.0 introduces CC, MIX, and FLEX Analysis Patterns.

TrendMedium 2.0 adds three new analysis patterns to the one available in the previous versions (the CO analysis pattern) and now has four patterns available for building profitable trading systems:

- 1) The CO analysis pattern: a trading system built using this pattern will analyze C-O values (as you could see in model formulas already).
- 2) The CC analysis pattern: a trading system built using this pattern will analyze C-C(-1) values (where C(-1) refers to the previous ticker value).
- 3) The MIX analysis pattern: a trading system will analyze both CO and CC values.
- 4) The FLEX analysis pattern: a trading system will analyze both CO and CC values in given proportion (equal values for buy and sell parts of the model).

You should select an analysis pattern when you add a new ticker or tickers to your list. When in the Add Ticker Dialog, select a pattern from the drop down list at the bottom:



Please note: WFT lets you find the optimal analysis pattern for your trading system. Simply run WFT for two or more analysis pattern and then select the most effective one.

Here are some sample models:

## A model using the CO analysis pattern:

```
{ TrendMedium trading system for ^NDX Daily }
if((Sum(Mov(C-O,10,S),14)-Ref(Sum(Mov(C-O,10,S),14),-1)>0) And (Sum(Mov(C-O,15,S),12)-Ref(Sum(Mov(C-O,15,S),12),-1)>0) And
(Sum(Mov(C-O,20,S),8)-Ref(Sum(Mov(C-O,20,S),8),-1)>0) And (Sum(Mov(C-O,11,S),17)-Ref(Sum(Mov(C-O,11,S),17),-1)>0) And
(Mov(C-O,11,S)>(-1)*Mov(C-O,7,S)) And (Mov(C-O,12,S)>(-1)*Mov(C-O,7,S))) And ((Mov(C-O,11,S)>(-1)*Mov(C-O,7,S)) And (Mov
(C-O,7,S)>(-1)*Mov(C-O,7,S)))
,1,if((Sum(Mov(C-O,15,S),12)-Ref(Sum(Mov(C-O,15,S),12),-1)<0) And (Sum(Mov(C-O,14,S),19)-Ref(Sum(Mov(C-O,14,S),19),-1)<0)
And (Sum(Mov(C-O,17,S),14)-Ref(Sum(Mov(C-O,17,S),14),-1)<0) And (Sum(Mov(C-O,21,S),11)-Ref(Sum(Mov(C-O,21,S),11),-1)<0)
And ((Mov(C-O,10,S)<(-1)*Mov(C-O,15,S)) And (Mov(C-O,10,S)<(-1)*Mov(C-O,10,S))) And ((Mov(C-O,18,S)<(-1)*Mov(C-O,9,S)) And
(Mov(C-O,10,S)<(-1)*Mov(C-O,17,S))), -1, 0))
{SUM_RANGE=7-21, MOV_RANGE=7-21}
```

## A model using the CC analysis pattern:

```
{ TrendMedium trading system for C Daily }
if((Sum(Mov(C-Ref(C,-1),4,S),5)-Ref(Sum(Mov(C-Ref(C,-1),4,S),5),-1)>0) And (Sum(Mov(C-Ref(C,-1),4,S),8)-Ref(Sum(Mov(C-Ref(C,-
1),4,S),8),-1)>0) And (Sum(Mov(C-Ref(C,-1),4,S),3)-Ref(Sum(Mov(C-Ref(C,-1),4,S),3),-1)>0) And (Sum(Mov(C-Ref(C,-1),9,S),7)-Ref
(Sum(Mov(C-Ref(C,-1),9,S),7),-1)>0) And ((Mov(C-Ref(C,-1),7,S)>(-1)*Mov(C-Ref(C,-1),4,S)) And (Mov(C-Ref(C,-1),11,S)>(-1)*Mov
(C-Ref(C,-1),8,S))) And ((Mov(C-Ref(C,-1),6,S)>(-1)*Mov(C-Ref(C,-1),5,S)) And (Mov(C-Ref(C,-1),3,S)>(-1)*Mov(C-Ref(C,-1),10,S)))
,1,if((Sum(Mov(C-Ref(C,-1),3,S),11)-Ref(Sum(Mov(C-Ref(C,-1),3,S),11),-1)<0) And (Sum(Mov(C-Ref(C,-1),5,S),8)-Ref(Sum(Mov(C-Ref
(C,-1),5,S),8),-1)<0) And (Sum(Mov(C-Ref(C,-1),8,S),10)-Ref(Sum(Mov(C-Ref(C,-1),8,S),10),-1)<0) And (Sum(Mov(C-Ref(C,-
1),11,S),3)-Ref(Sum(Mov(C-Ref(C,-1),11,S),3),-1)<0) And ((Mov(C-Ref(C,-1),11,S)<(-1)*Mov(C-Ref(C,-1),10,S)) And (Mov(C-Ref(C,-
1),7,S)<(-1)*Mov(C-Ref(C,-1),4,S))) And ((Mov(C-Ref(C,-1),11,S)<(-1)*Mov(C-Ref(C,-1),10,S)) And (Mov(C-Ref(C,-1),3,S)<(-1)*Mov
(C-Ref(C,-1),12,S))), -1, 0))
{SUM_RANGE=3-12, MOV_RANGE=3-12}
```

## A model using the MIX analysis pattern:

```
{ TrendMedium trading system for PFE Daily }
if((Sum(Mov(C-O,11,S),13)-Ref(Sum(Mov(C-O,11,S),13),-1)>0) And (Sum(Mov(C-O,14,S),14)-Ref(Sum(Mov(C-O,14,S),14),-1)>0) And
(Sum(Mov(C-Ref(C,-1),15,S),15)-Ref(Sum(Mov(C-Ref(C,-1),15,S),15),-1)>0) And (Sum(Mov(C-Ref(C,-1),10,S),15)-Ref(Sum(Mov(C-Ref
(C,-1),10,S),15),-1)>0) And ((Mov(C-O,13,S)>(-1)*Mov(C-O,11,S)) And (Mov(C-O,12,S)>(-1)*Mov(C-O,11,S))) And ((Mov(C-Ref(C,-
1),12,S)>(-1)*Mov(C-Ref(C,-1),10,S)) And (Mov(C-Ref(C,-1),11,S)>(-1)*Mov(C-Ref(C,-1),13,S)))
,1,if((Sum(Mov(C-O,10,S),14)-Ref(Sum(Mov(C-O,10,S),14),-1)<0) And (Sum(Mov(C-O,10,S),10)-Ref(Sum(Mov(C-O,10,S),10),-1)<0)
And (Sum(Mov(C-Ref(C,-1),11,S),10)-Ref(Sum(Mov(C-Ref(C,-1),11,S),10),-1)<0) And (Sum(Mov(C-Ref(C,-1),14,S),11)-Ref(Sum(Mov
(C-Ref(C,-1),14,S),11),-1)<0) And ((Mov(C-O,12,S)<(-1)*Mov(C-O,11,S)) And (Mov(C-O,10,S)<(-1)*Mov(C-O,10,S))) And ((Mov(C-Ref
(C,-1),12,S)<(-1)*Mov(C-Ref(C,-1),13,S)) And (Mov(C-Ref(C,-1),14,S)<(-1)*Mov(C-Ref(C,-1),11,S))), -1, 0))
{SUM_RANGE=10-15, MOV_RANGE=10-15}
```

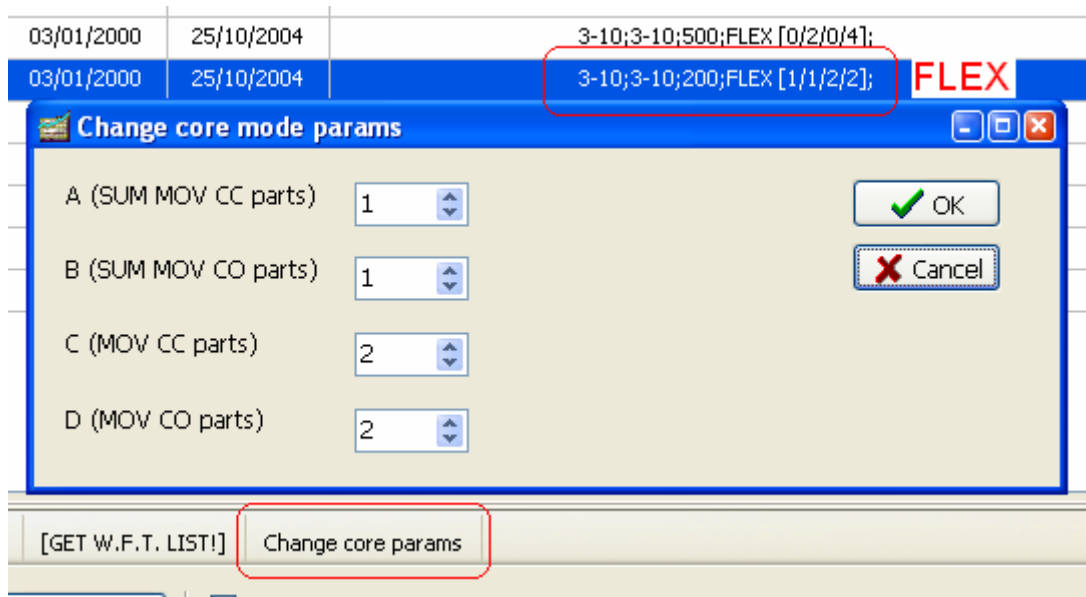
## A model using the FLEX analysis pattern:

Coming soon ;-)

### 3. The FLEX Analysis Pattern

This analysis pattern allows you to change the number of the CO SUM, MOV and CC SUM, MOV parts in the trading system model. The CO, CC, and MIX patterns have four SUM and MOV parts, but the MIX pattern uses two SUM CO, two MOV CO and two SUM CC and MOV CC parts.

In order to change the number of the CC and CO parts for your trading system, click the Change Core Params button:



After that, enter the number of the SUM and MOV parts for both the CO and the CC patterns.

Please note: using the CO parts for funds is not recommended.



#### 4. MOV and SUM Ranges.

TrendMedium 2 now lets you define ranges for the MOV and SUM parts of your trading system.

If you examine any formula for a trading system model, you will find the MOV and SUM parts of the system:

```
if((Sum(Mov(C-O,11,S),13)-Ref(Sum(Mov(C-O,  
Sum(Mov(C-Ref(C,-1),15,S),15)-Ref(Sum(Mov  
(C,-1),10,S),15),-1)>0) And ((Mov(C-O,13,S)>  
1),12,S)>(-1)*Mov(C-Ref(C,-1),10,S)) And (M  
,1,if((Sum(Mov(C-O,10,S),14)-Ref(Sum(Mov(C  
And (Sum(Mov(C-Ref(C,-1),11,S),10)-Ref(Sum  
(C-Ref(C,-1),14,S),11),-1)<0) And ((Mov(C-O,  
(C,-1),12,S)<(-1)*Mov(C-Ref(C,-1),13,S)) And  
{SUM_RANGE=10-15, MOV_RANGE=10-15}
```

SUM part

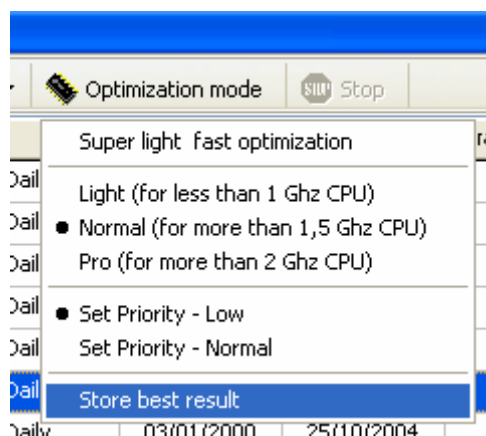
MOV part

If you change the values for the MOV and SUM ranges, TrendMedium will calculate the trading system using these values for every MOV and SUM part. By default, TrendMedium uses ranges of 3 to 12 days.

### 5. Store the Best Optimization Result Feature.

You can tell TrendMedium to remember the best optimization result after each iteration and use it to speed up the calculation of remaining iterations. With this option turned on, TrendMedium will spend less time calculating optimal results, but there's a probability that the resulting trading system will be less effective than the one calculated with the feature disabled (and thus with more time spent for calculation).

You can enable or disable the feature by clicking Store Best Result in the Optimization Mode menu:

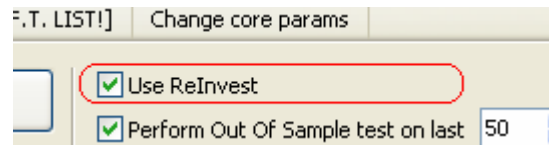


## 6. ReInvest Feature.

TrendMedium can calculate profit in two ways:

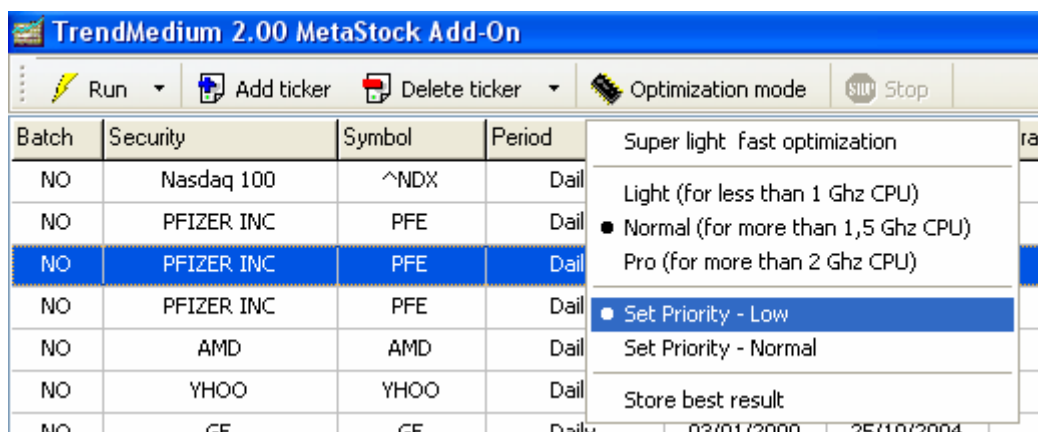
- a) using the obtained profit for the next trade (reinvesting)
- b) using only the initially specified capital for all trades

You can turn reinvesting on or off by checking/unchecking the Use ReInvest option:



## 7. Controlling CPU Load

You can control how many CPU resources TrendMedium uses. The Optimization Mode menu now has two options for selecting calculation priority: Low and Normal. By default, calculation priority is set to Low. It's the recommended setting, as it will let you run TrendMedium in the background. Other applications will run smoothly at the same time because TrendMedium will use only free CPU resources.



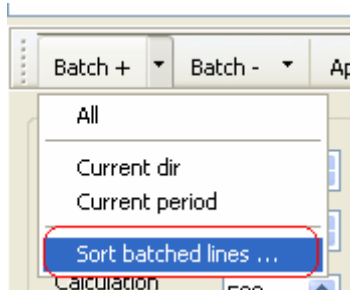
The screenshot shows the TrendMedium 2.00 MetaStock Add-On interface. The title bar reads "TrendMedium 2.00 MetaStock Add-On". The menu bar includes "Run", "Add ticker", "Delete ticker", "Optimization mode", and "Stop". The main window displays a table with columns: Batch, Security, Symbol, and Period. The table contains several rows of data, including Nasdaq 100, PFIZER INC, and AMD. The "Optimization mode" menu is open, showing options: "Super light: fast optimization", "Light (for less than 1 Ghz CPU)", "Normal (for more than 1,5 Ghz CPU)", "Pro (for more than 2 Ghz CPU)", "Set Priority - Low", "Set Priority - Normal", and "Store best result". The "Set Priority - Low" option is currently selected.

Batch	Security	Symbol	Period
NO	Nasdaq 100	^NDX	Dail
NO	PFIZER INC	PFE	Dail
NO	PFIZER INC	PFE	Dail
NO	PFIZER INC	PFE	Dail
NO	AMD	AMD	Dail
NO	YHOO	YHOO	Dail
NO	CF	CF	Dail

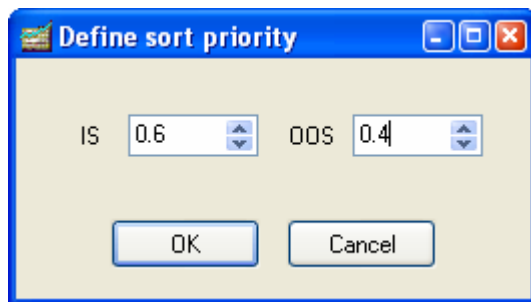
## 8. *Sorting Batched Lines.*

This feature lets you sort batched tickers in your list (you will need to batch tickers before you can sort them).

In order to sort the batched tickers, click Batch +, then click Sort Batched Lines:



After that, you will be prompted for the priorities of IS and OOS values that will be used for sorting. Enter the suitable values and click OK.



The figure below shows you a sample list before sorting:

IS profit	OOS profit	Path ...
57.47	-1000.00	D:\_indexes
36.09	-23.69	D:\_sp500
61.25	10.65	D:\_sp500
4.84	15.56	D:\_sp500
454.75	23.66	F:\top15
193.45	-53.20	F:\top15
51.17	10.13	F:\top15
16.66	-12.11	F:\top15
47.85	-13.54	F:\top15
63.61	26.20	F:\top15
41.57	39.77	F:\top15

And here's how the sorted list will look:

IS profit	OOS profit	Path ...
454.75	23.66	F:\top15
193.45	-53.20	F:\top15
63.61	26.20	F:\top15
61.25	10.65	D:\_sp500
41.57	39.77	F:\top15
51.17	10.13	F:\top15
47.85	-13.54	F:\top15
36.09	-23.69	D:\_sp500
4.84	15.56	D:\_sp500
16.66	-12.11	F:\top15
57.47	-1000.00	D:\_indexes