A Geo-Sector Rotation Methodology

Improving performances, keeping volatility low (but not too low …)

Paolo Sassetti
Torri del Benaco
(Garda Lake, Verona)
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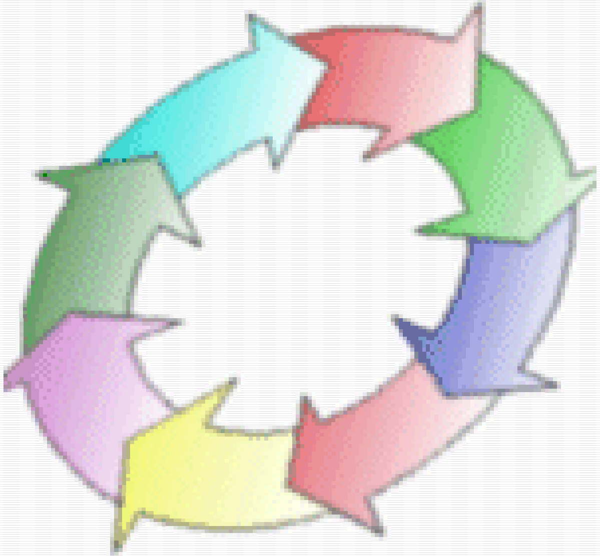
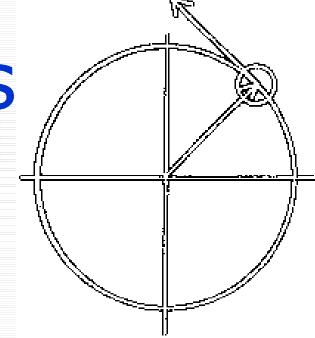
General Thoughts



Introduction: geo/sector rotation is the best available investment methodology (at least on paper …)



Rotation methodologies enable the highest number of degrees of freedom in asset management, avoiding to remain in the same markets when they move lazily within *trading ranges:* in fact, rotation models tend to abandon lazy situations in search for the most dynamic and trending markets. The concept of “degrees of freedom” has a statistical origin but, here, it means catching investment opportunities where they have the highest chances of superior performances; therefore it refers to the dimension of the investable universe.

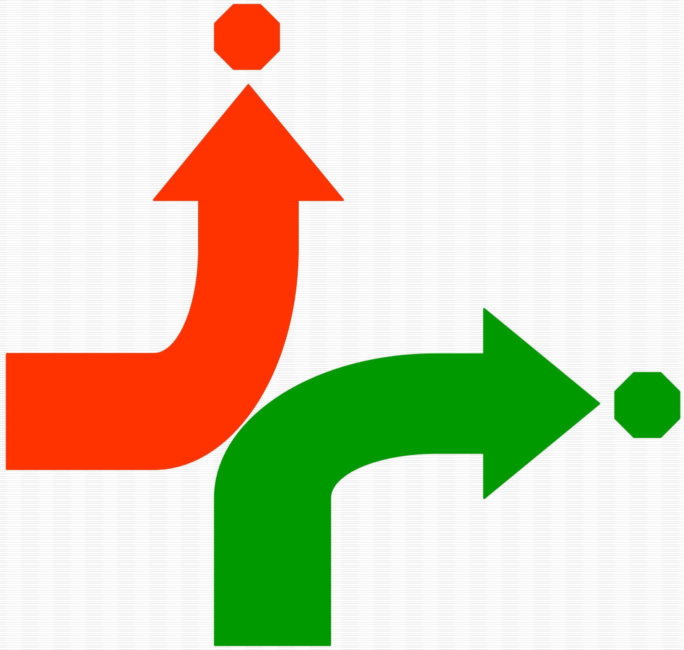
Conditions for working properly

Nethertheless, even in the best of the possibile worlds, in order to avoid an excess of risk concentration, you have to select jointly many investment opportunities (indexes). The number of joint investments <u>must</u> grow with the time horizon chosen because the longer it is, the deeper the potential *equity drawdowns* may be and this implies a growing need for diversification.

The necessary compromise

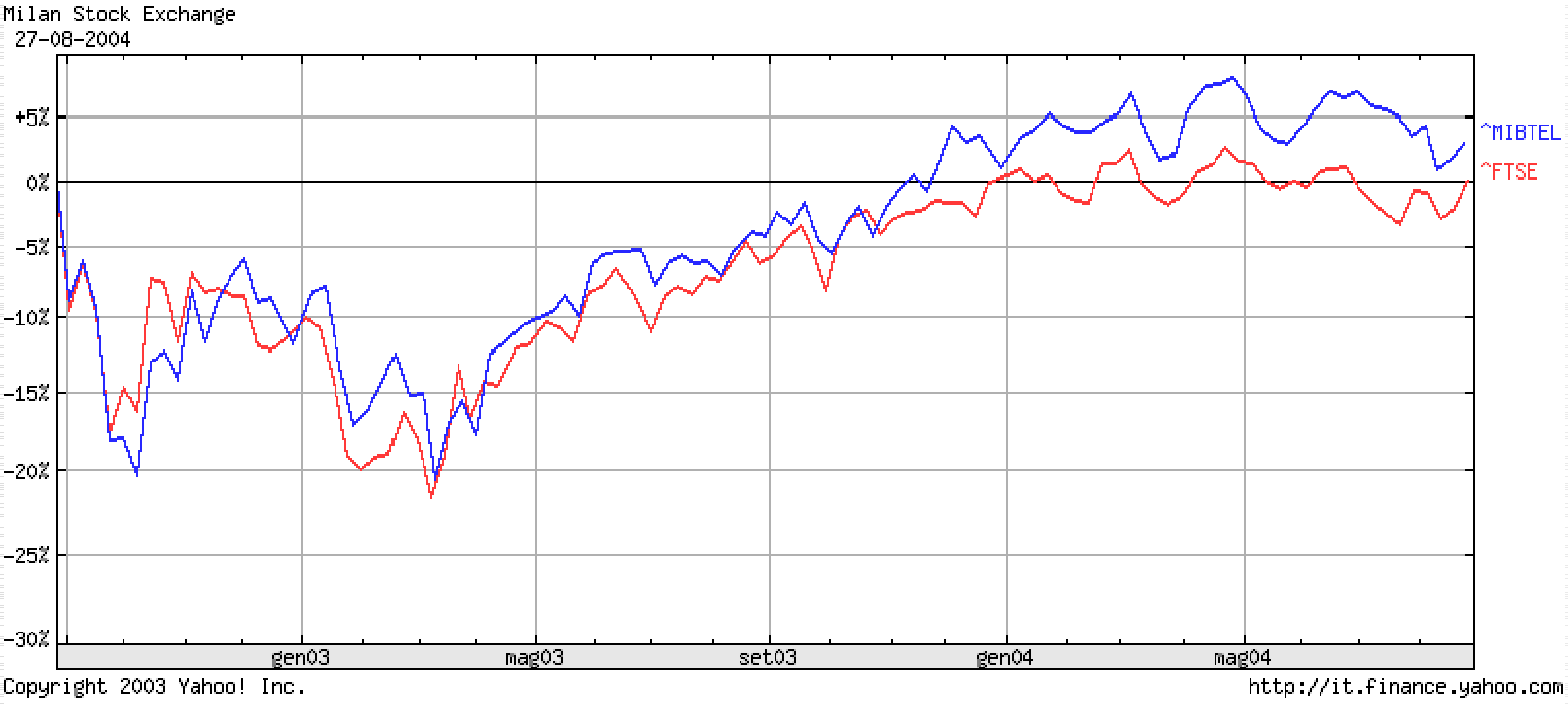
Rotation models usually imply middle/long time horizons in order to reduce the impact of transaction costs, unless you may adopt costless switching strategies among mutual funds. This implies high potential equity drawdowns on single *asset classes* and, therefore, the need for a wide diversification and a wider investable universe.

Examples of Markets Not Correlated to Traditional Indexes



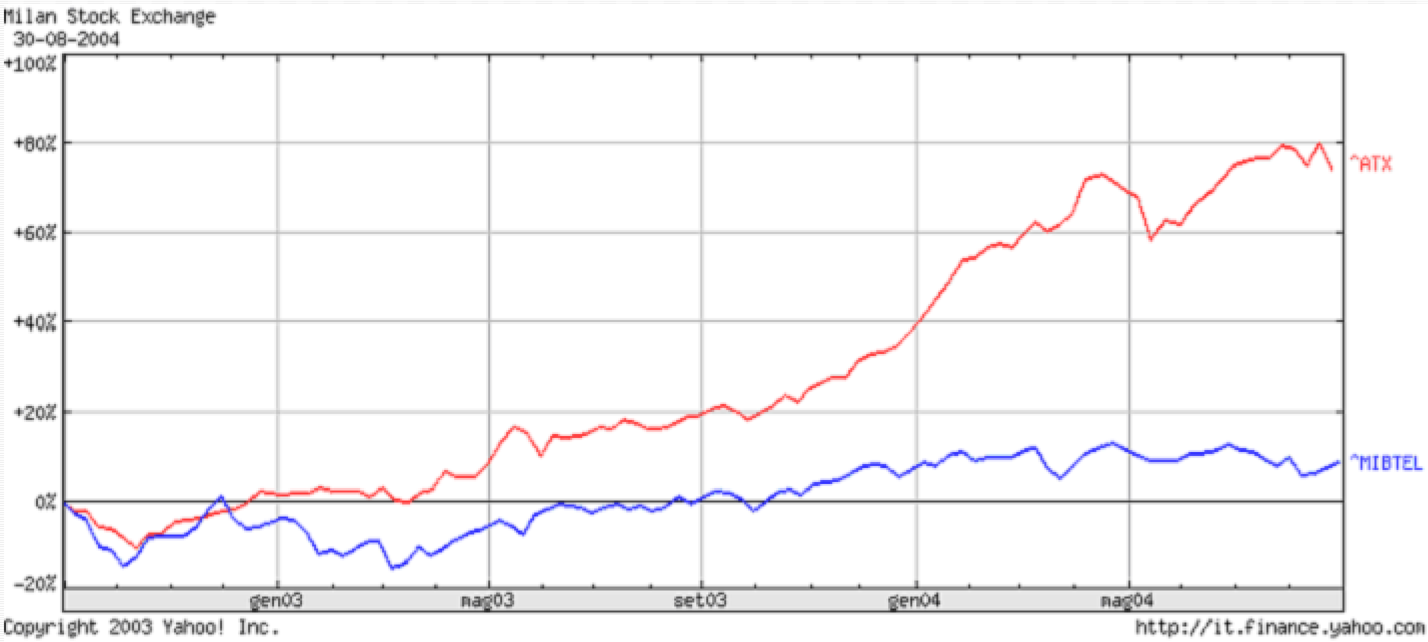
Stocks' latest 24 months. The European Stock Exchanges

Mibtel (I) and FTSE 100 (UK) did not offer any diversification in the last 24 months.

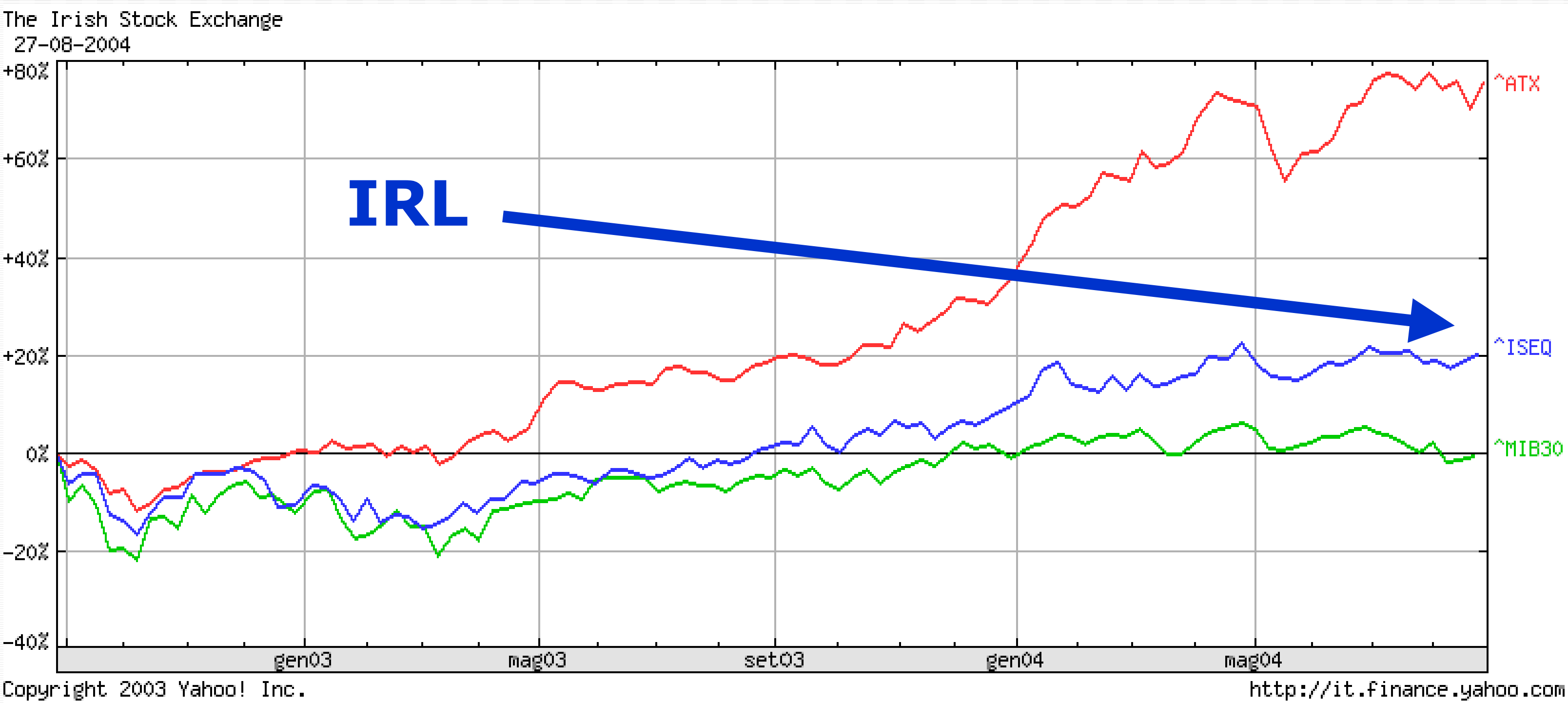


The Austrian Stock Exchange emerged in Europe …

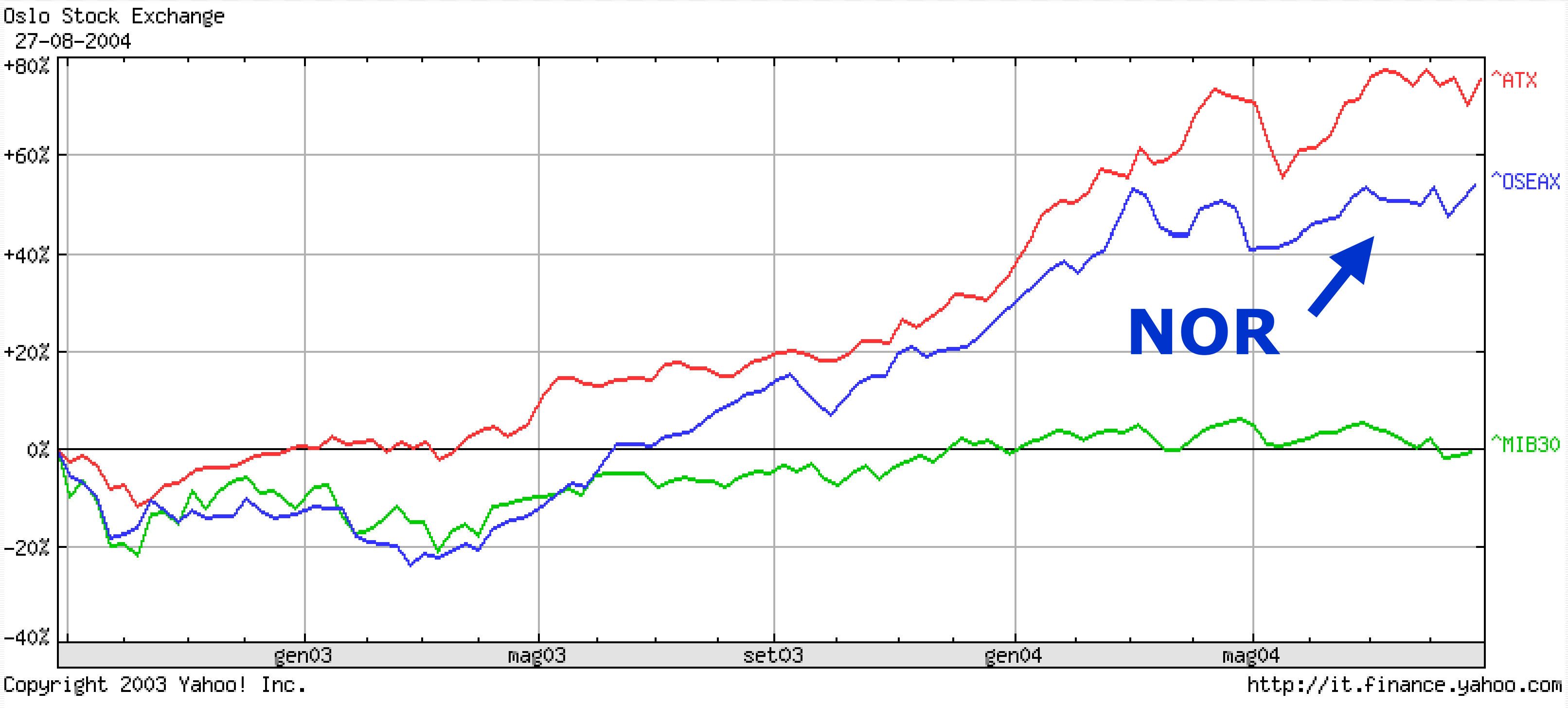
… in terms of strength and “directionality”. Which analyst or economist could have <u>forecasted</u> this performance *ex ante* in Europe?



Even the Irish Stock Exhange performed better than the Italian one

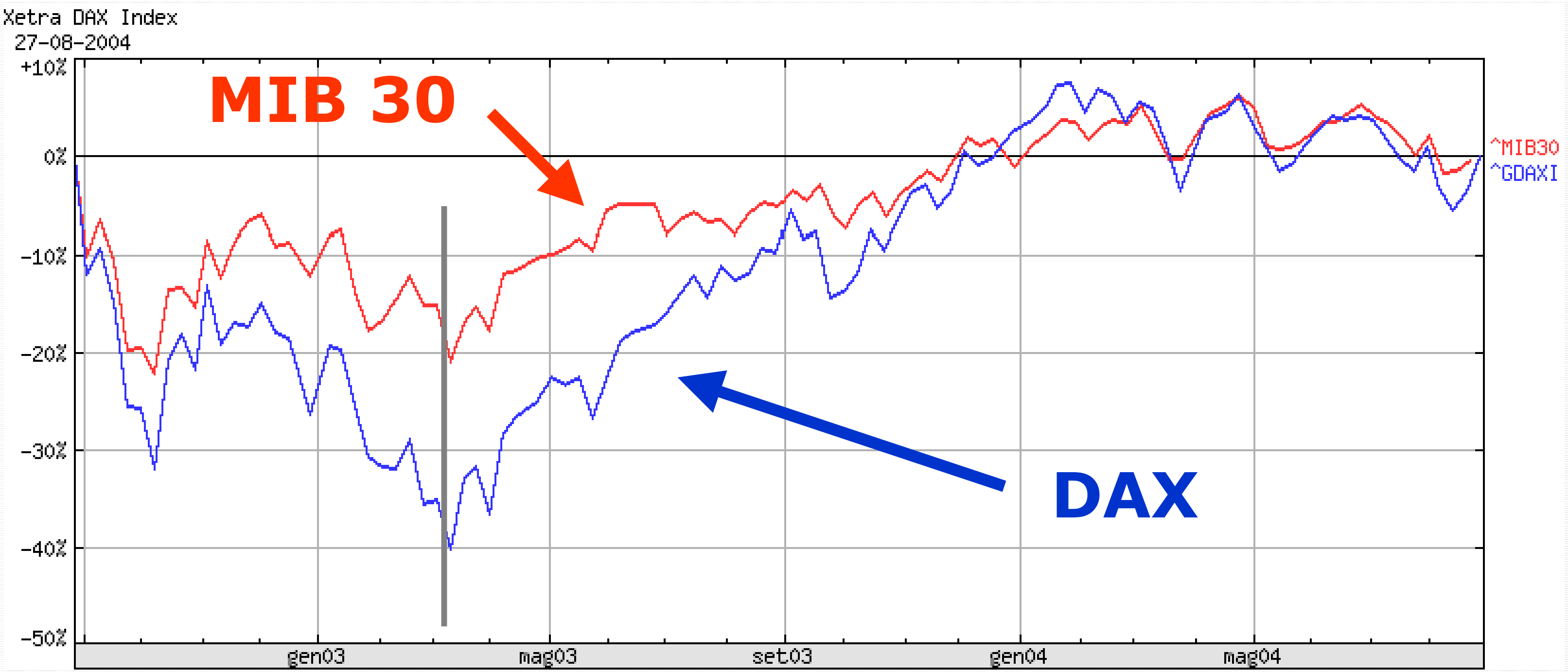


The Norwegian Stock Exchange performed well, too …



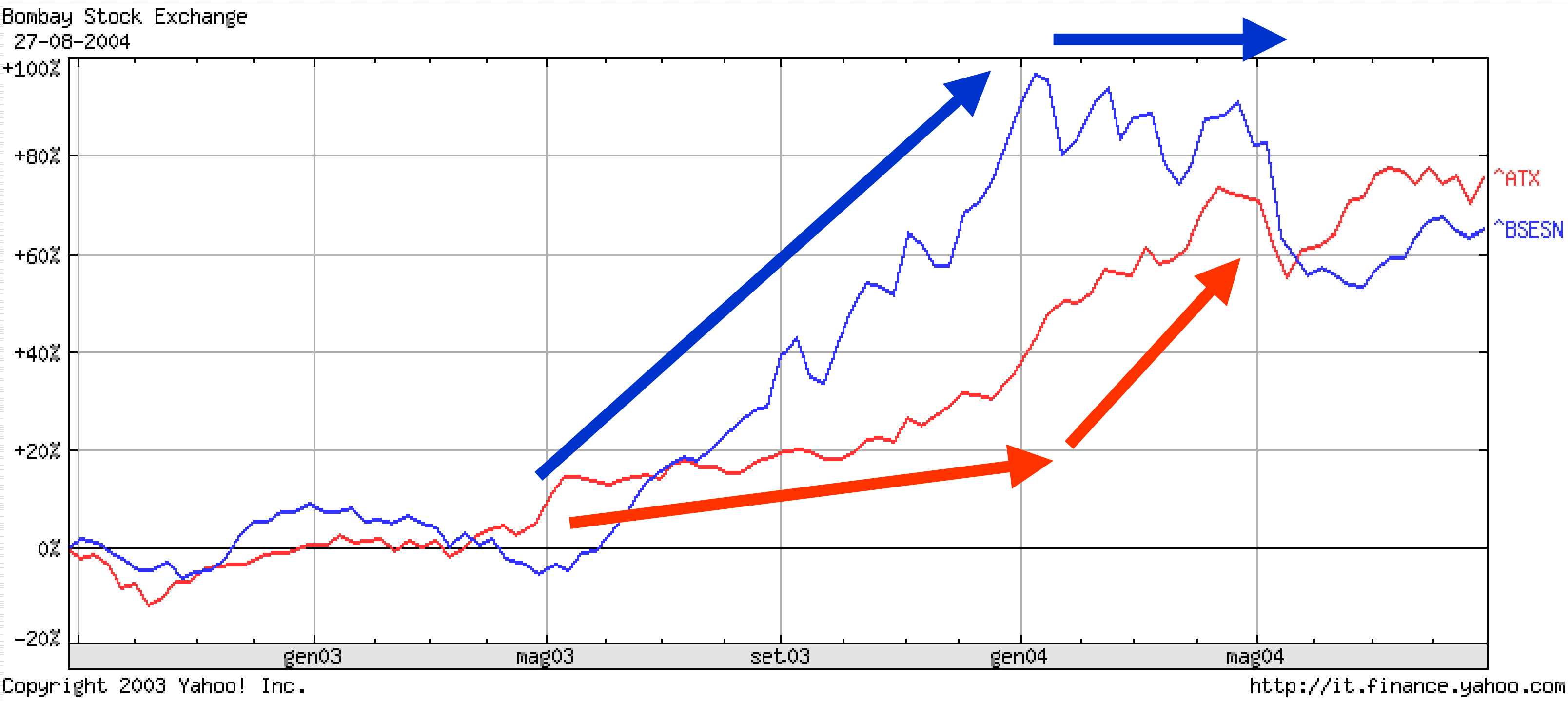
And even when the stock exchanges converge in the long run …

… sometimes you may find switching opportunities between markets which may last many months.



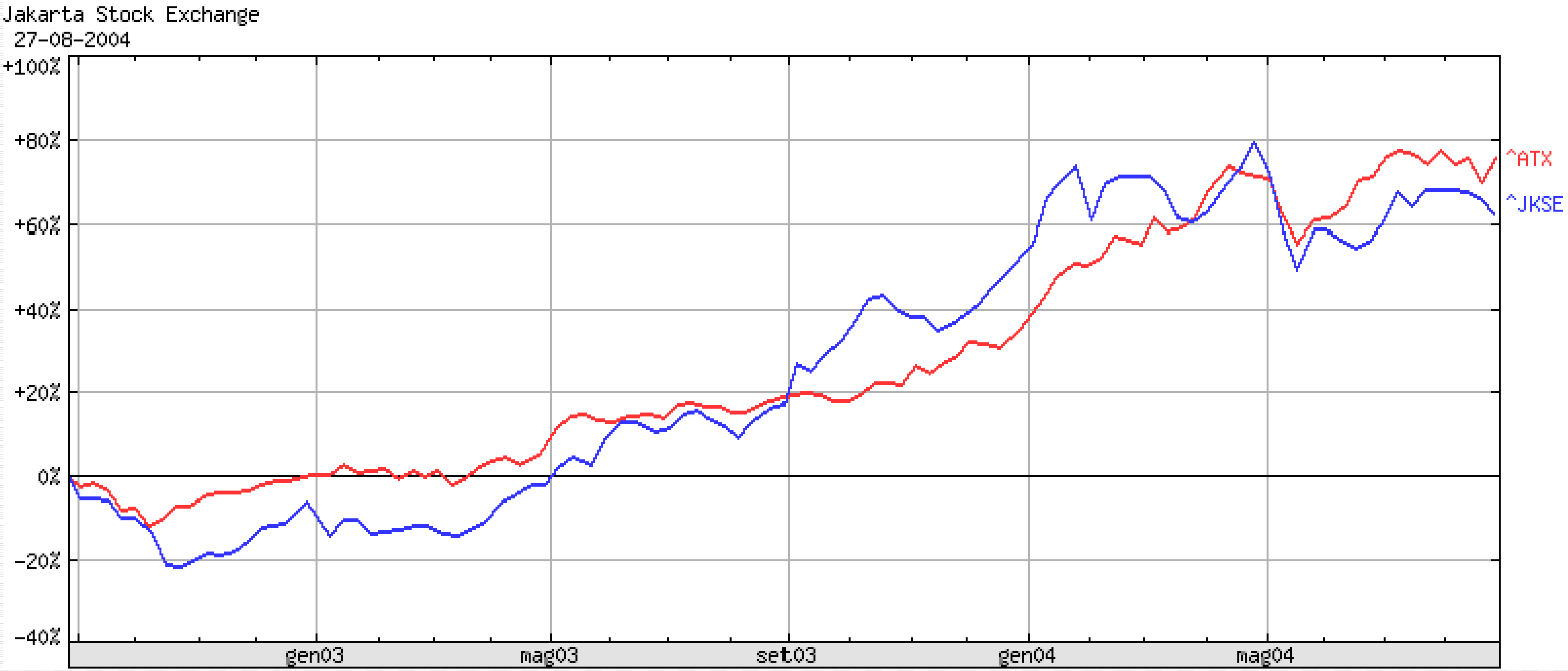
Widening the investable universe, you may increase your investment degrees of freedom

The Bombay Stock Exchange overperformed the Austrian Stock Exchange for a long period.



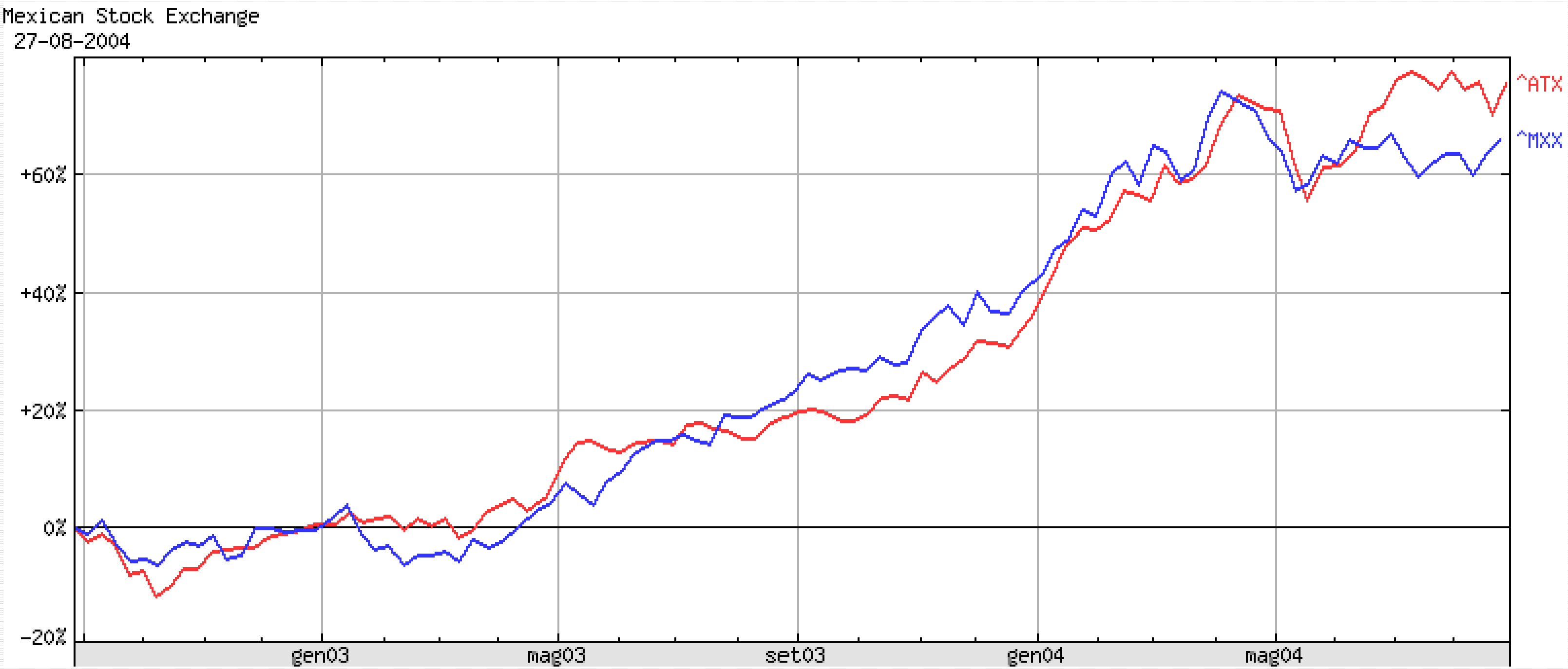
The Jakarta Stock Exchange …

… was a pretty good *proxy variable* for the Austrian Stock Exchange!



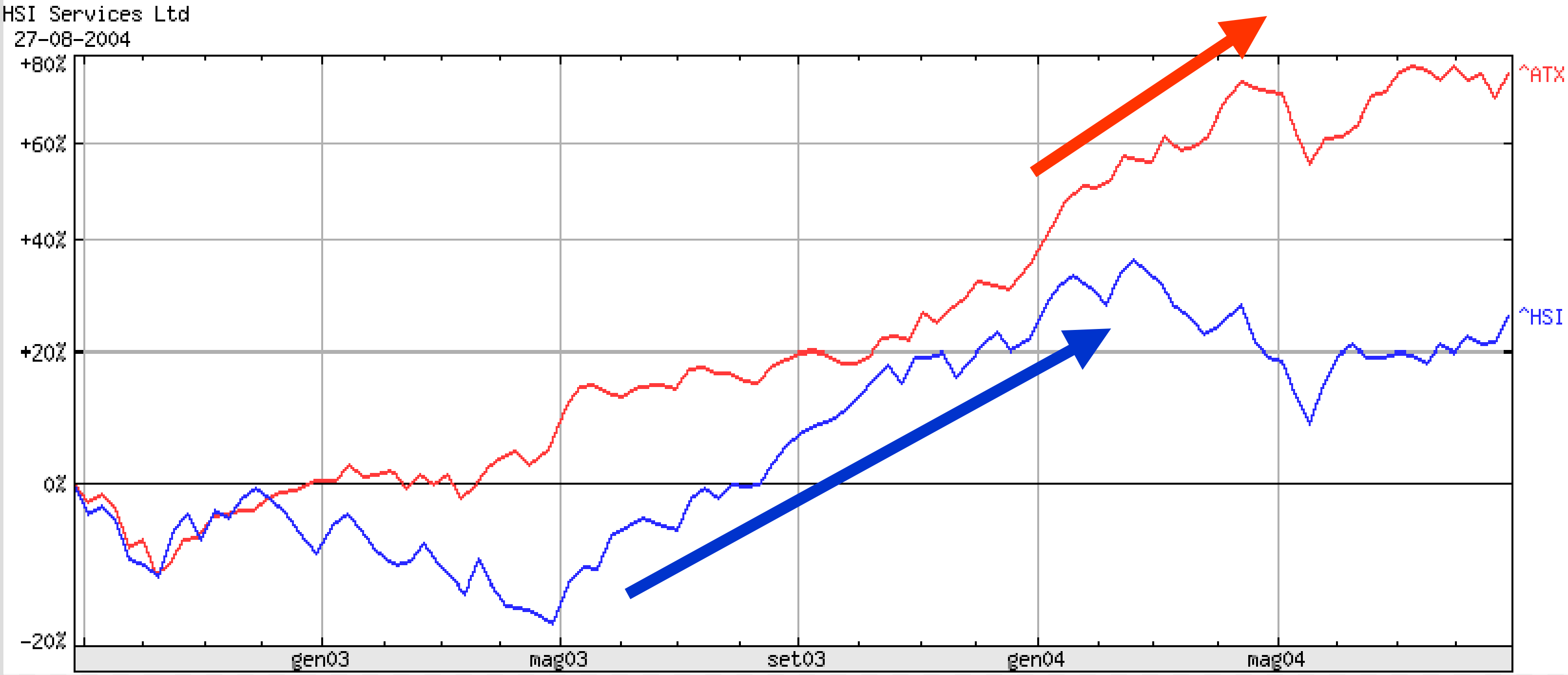
Even the Mexican Stock Exchange …

… was a pretty good *proxy variable* for the Austrian Stock Exchange!

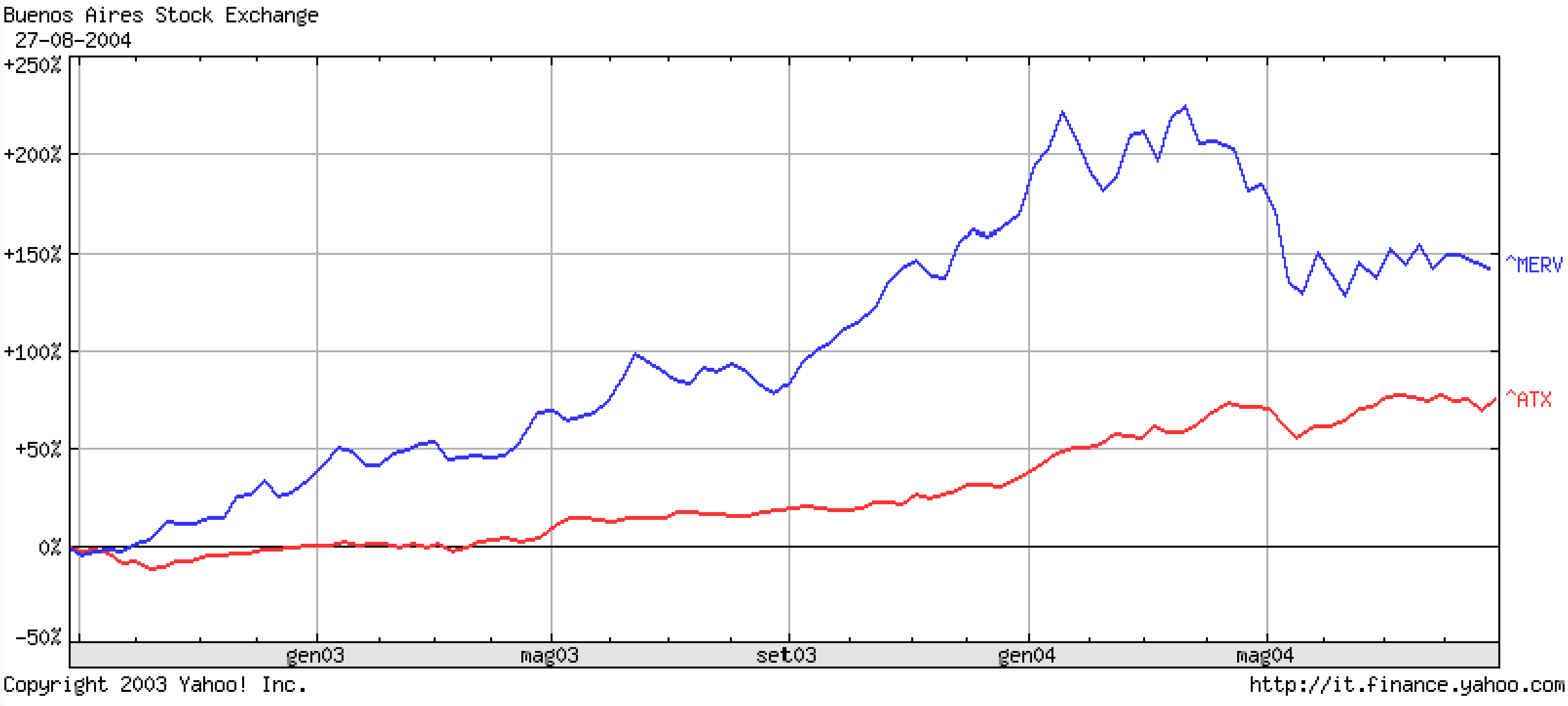


Hong Kong had a glorious period …

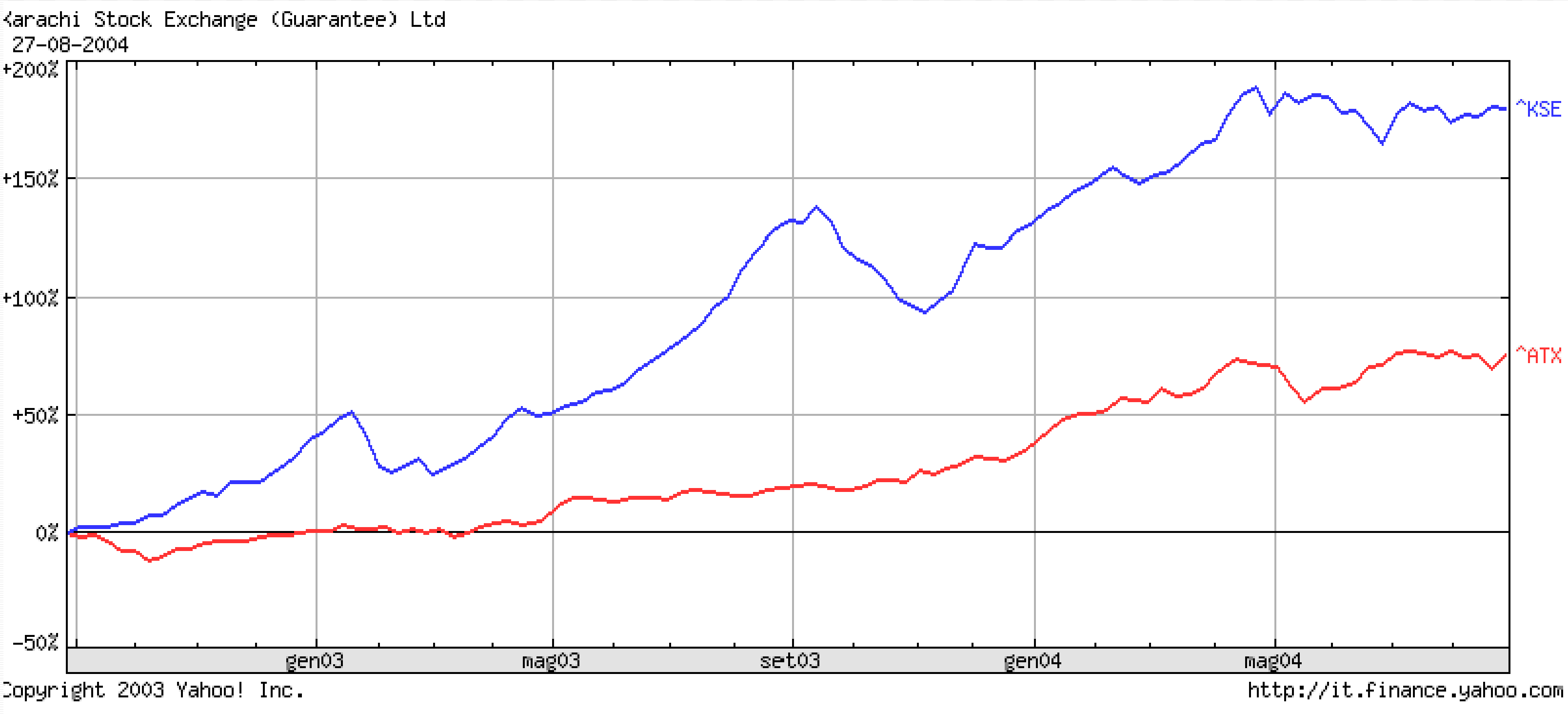
… before passing the baton …



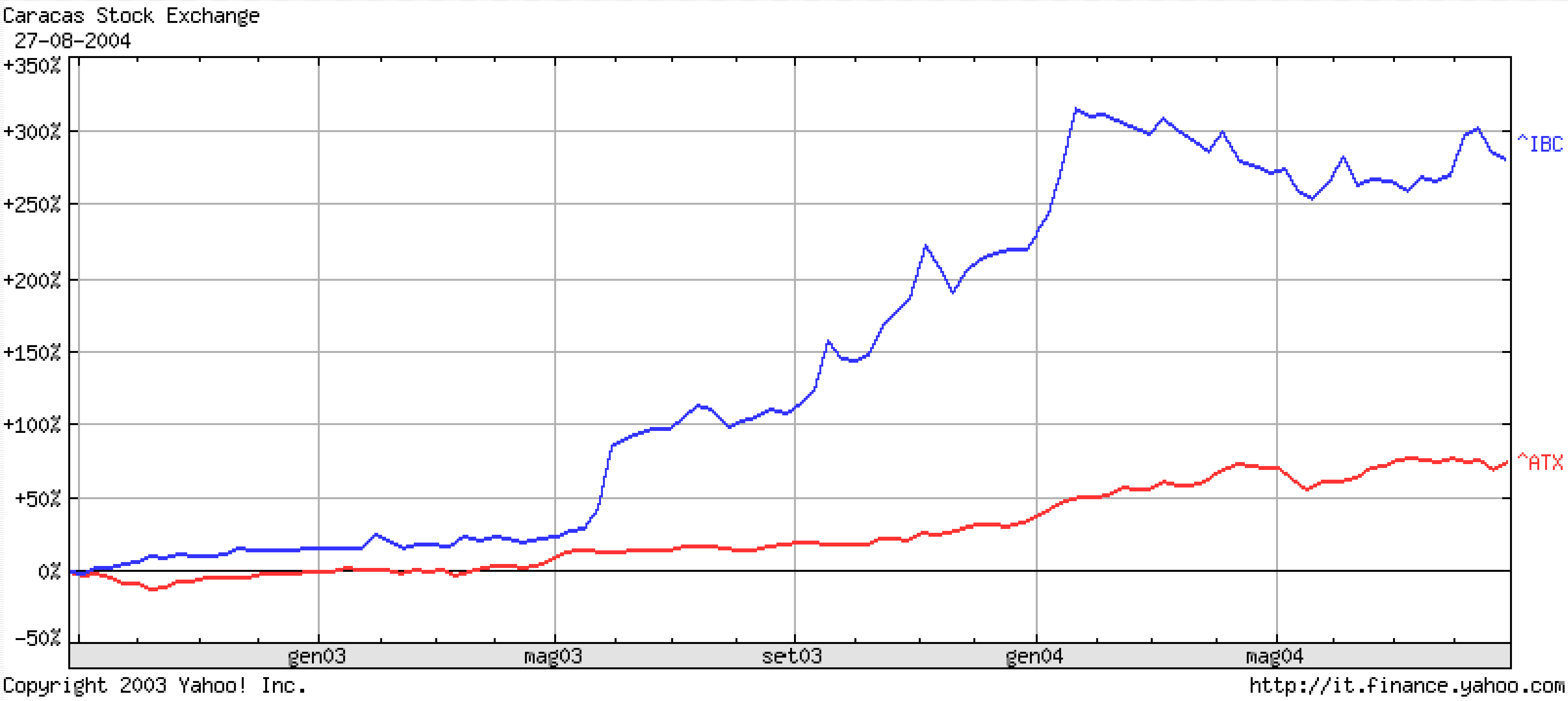
Anyway, the Argentinian index outperformed the Austrian index (and all the European markets)



The Karachi Stock Exchange did extremely well



The Venezuela Stock Exchange was by far the best one



What to do in emerging / exotic markets?

Venezuela, Messico, Argentina, Indonesia obviously are all markets which require small allocations but you could allocate 10-15% of a global portfolio on <u>many</u> emerging markets, if a rotation model suggests to do that.

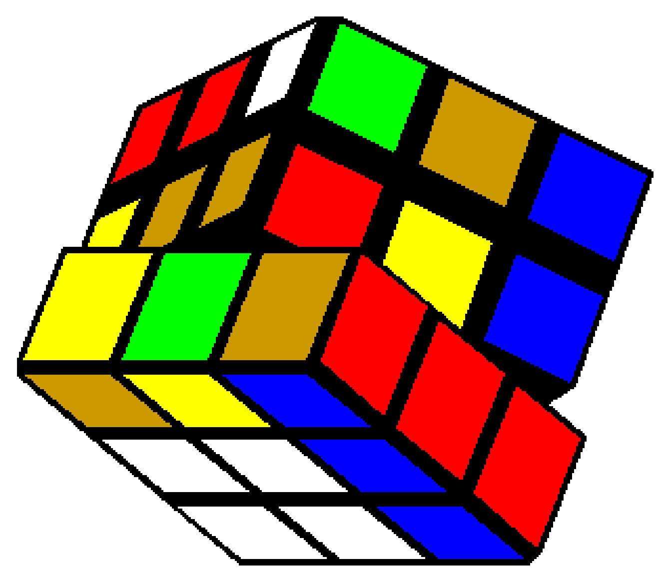
Investment strategy

Geographical rotation among emerging markets, if truly active, may be as profitable as sector rotation.

How to do

ETFs, when available, or ADRs of blue chips of emerging countries listed in the NYSE.

How to Manage the Complexity of Multiple Opportunities



Two alternative methodologies to rotate among multiple asset classes

- **Trend following**: you choose the strongest asset classes, under the assumption of trend persistence;
- **Counter trend following**: you choose the weakest asset classes, under the assumption of “mean reversion” towards the mean.

We like the first philosophy much more

Trend following

Premise of the *trend following* approach: impossibility of making systematically correct forecasts

"I don't believe that I am the only person who cannot predict future prices. No one consistently can predict anything, especially investors. Prices, not investors, predict the future. Despite this, investors hope or believe that they can predict the future, or someone else can. A lot of them look to you to predict what the next macroeconomic cycle will be. We rely on the fact that other investors are convinced that they can predict the future, and I believe that's where our profits come from. I believe it's that simple".
John W. Henry

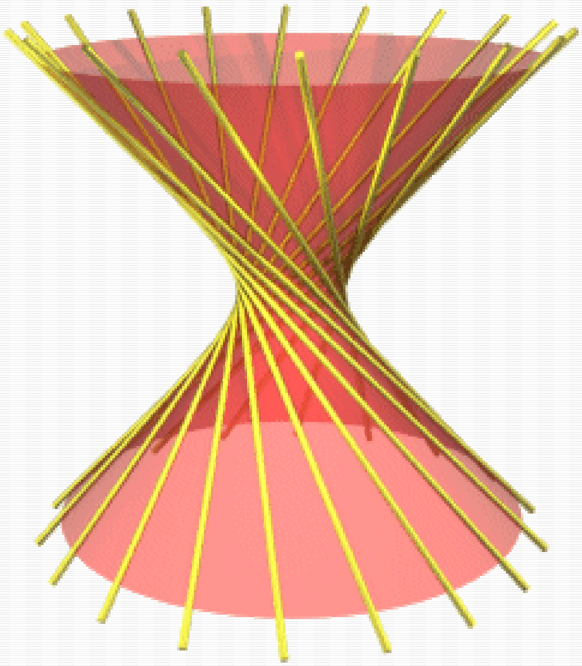
Meaning and implications of impossible forecasts

- **Meaning**: even though an analyst would be able to do acceptable forecasts on a single market, he would not be able to do acceptable predictions on all the markets, which means a waste of opportunities;
- **Classic implication** (Sharpe): if you can not forecast the markets, the only rational management choice is low cost indexing in order to earn the risk premium in the long run;
- **Alternative implication**: you can not predict the markets but you can <u>follow</u> their motion because their motion follows middle term trends determined mainly by human psicology.

In short …

… portfolio rotation avoids some of the more traditional problems of "program trading" on indexes in choppy markets. Systematic rotation allows a rational management of the complexity of the many existing investment opportunities. Other rational solutions, mainly fundamental, are available but they are much more complicated and not necessarily more efficient.

A Rotation Model



Base case

- 18 European sector indexes
- weekly data
- from 17/May/96 to 2/July/2004
- a middle term traditional strength indicator ranks the sectors
- model always in the market (<u>no filter, no condition “if…then”)</u>
- optimal number of selected indexes: 5 on 18, traditional bell shaped returns with changing number of selected indexes

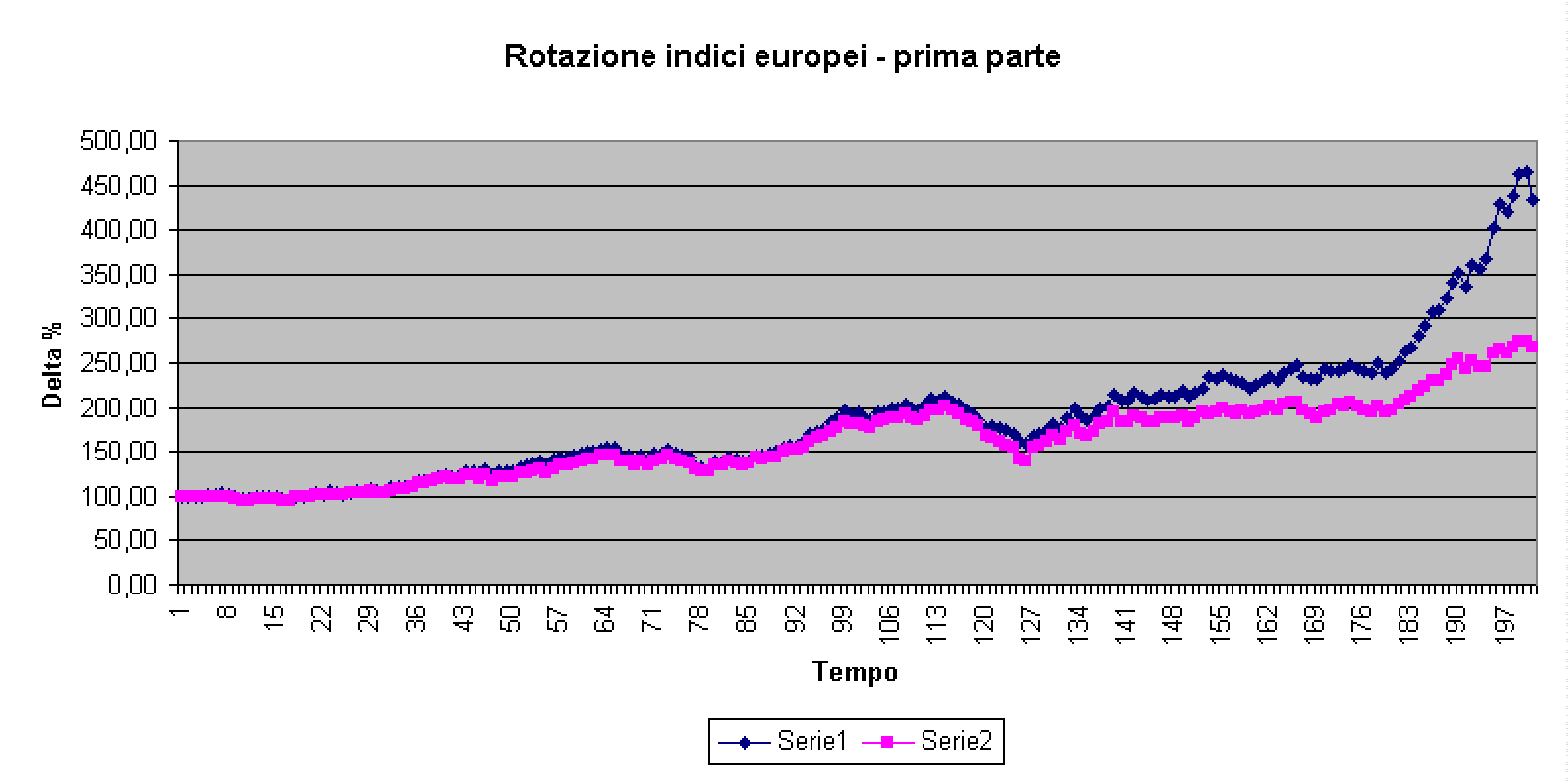
Base case

- Average return of 18 indexes: 152 %
- Portfolio return based on 5 indexes: 320 %
- Return with 2 indexes: 208 %
- 3 indexes: 249 %
- 4 indexes: 271 %
- 5 indexes: 320 % top performance
- 6 indexes: 263 %
- 7 indexes: 237 %
- 8 indexes: 220 %

Base case

See P.Sassetti – M.Tani research on sector rotation (*“Dynamic Asset Allocation Using Systematic Sector Rotation”*, 2003).

Base case


Rotazione indici europei - prima parte
500,00
450,00
400,00
350,00
300,00
250,00
200,00
150,00
100,00
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0,00
Delta %
1
8
15
22
29
36
43
50
57
64
71
78
85
92
99
106
113
120
127
134
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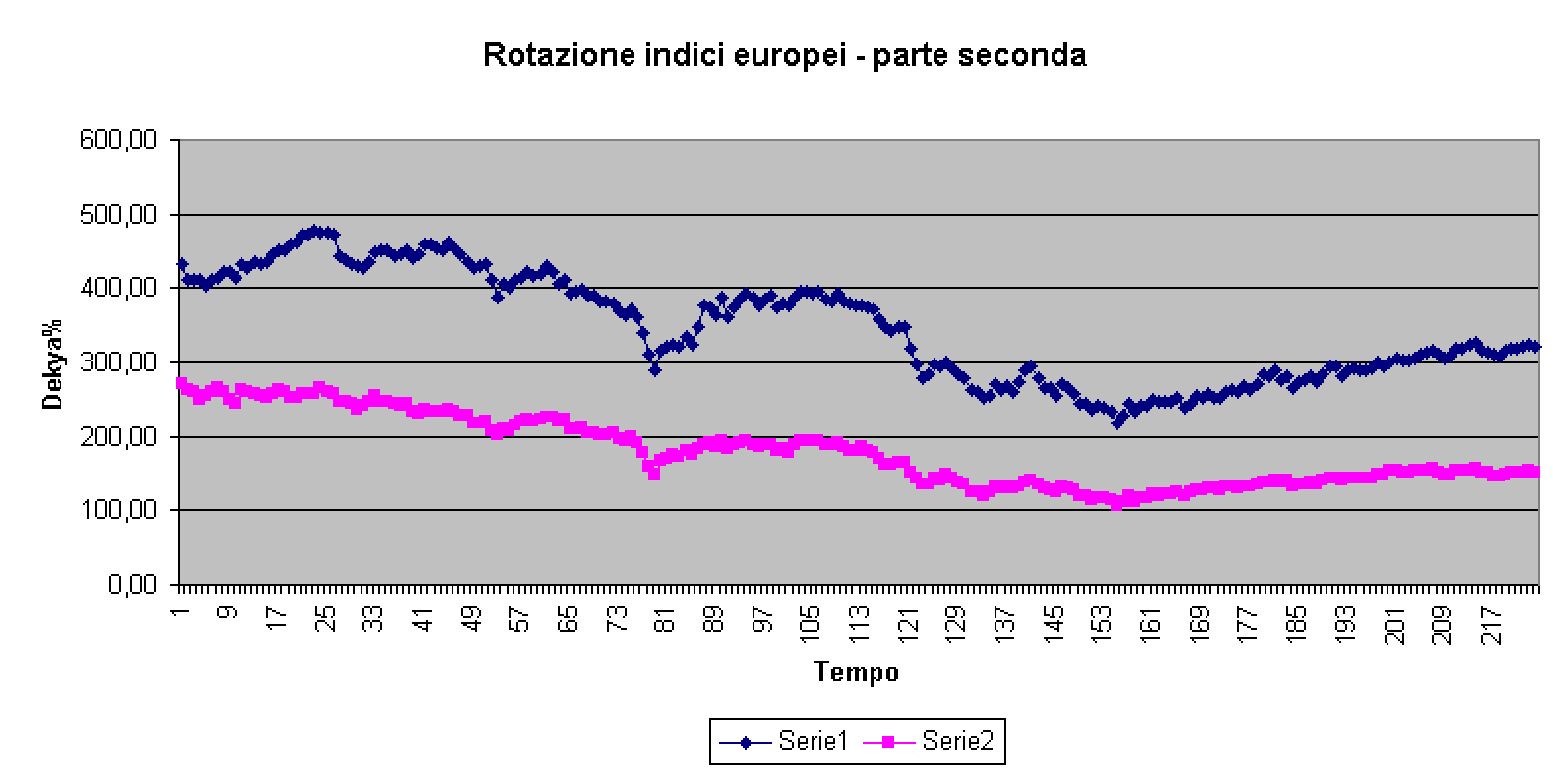
148
155
162
169
176
183
190
197
Tempo
Serie1
Serie2

Base case



Rotazione indici europei - parte seconda
600,00
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97
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113
121
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137
145
153
161
169
177
185
193
201
209
217
Tempo
Serie1
Serie2

Case 2: “bull” filter

- Same indicators as in the base case (to enable comparison) and same parameters to rank the sectors but …
- … in case 2 the indicators must be positive. Therefore, in some market phases, the model selects fewer than 5 indexes and sometimens may even go “flat”.
- optimal maximum number of selected indexes: again, 5 on 18

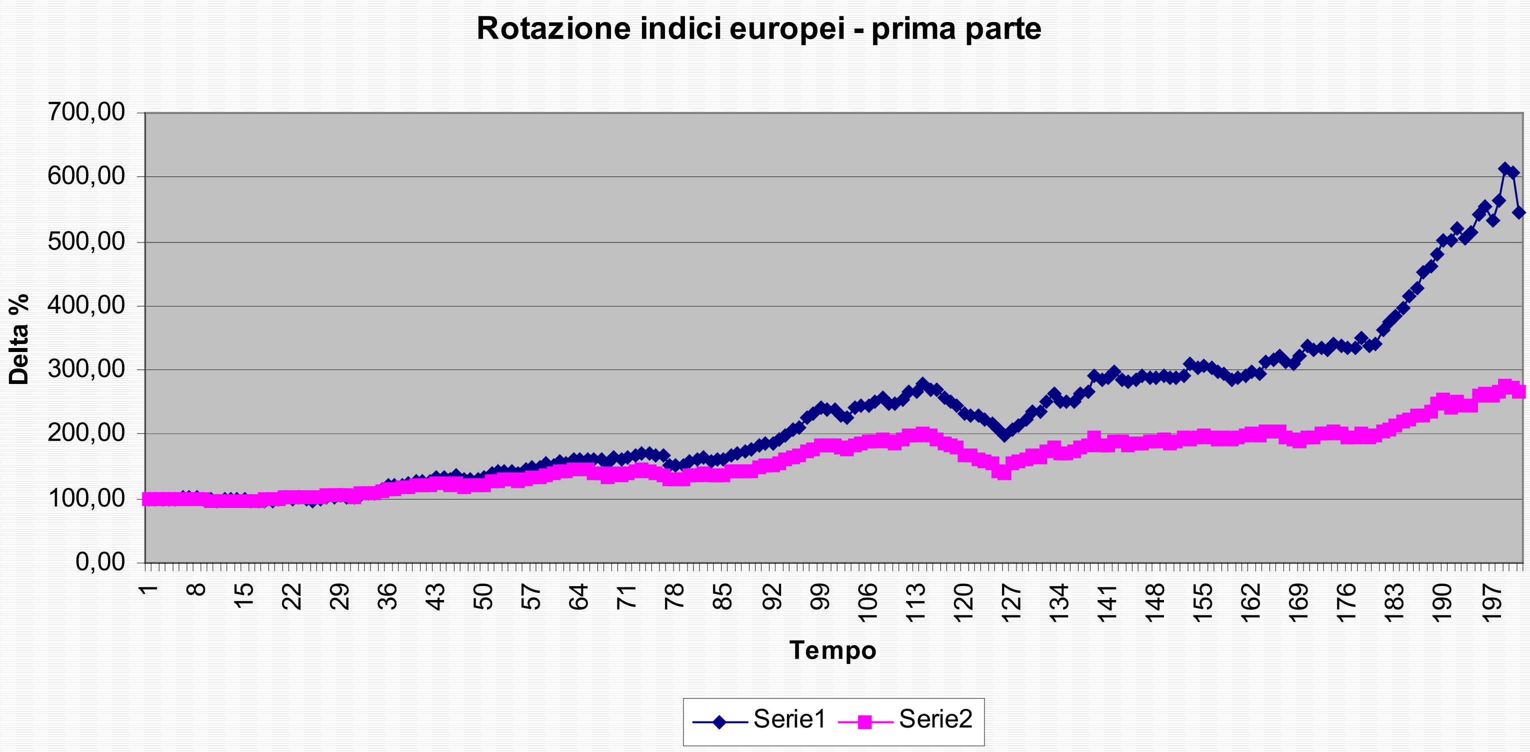
Case 2: “bull” filter

- Average return of 18 indexes: 152 %
- Portfolio return based on 5 indexes: 574 %
- Return with 2 indexes: 326 %
- 3 indexes: 544 %
- 4 indexes: 537 %
- 5 indexes: 574 % <u>top</u> performance
- 6 indexes: 467 %
- 7 indexes: 410 %
- 8 indexes: 399 %

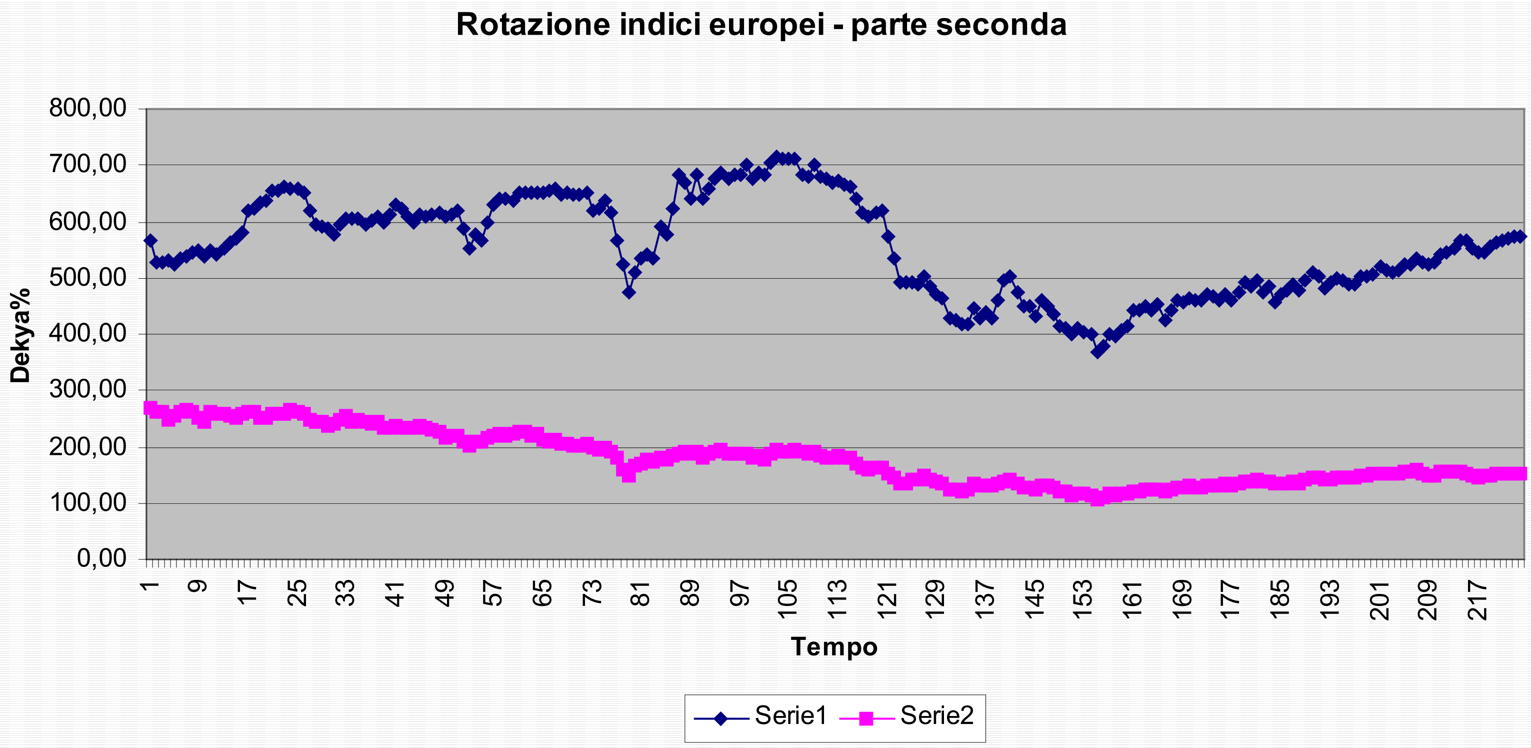
Case 2: “bull” filter

- Gross returns nearly doubled
- positive indicators add value to the investment strategy: reasonable conclusion, being a long-only trend following strategy.

Case 2: “bull” filter



Case 2: “bull” filter



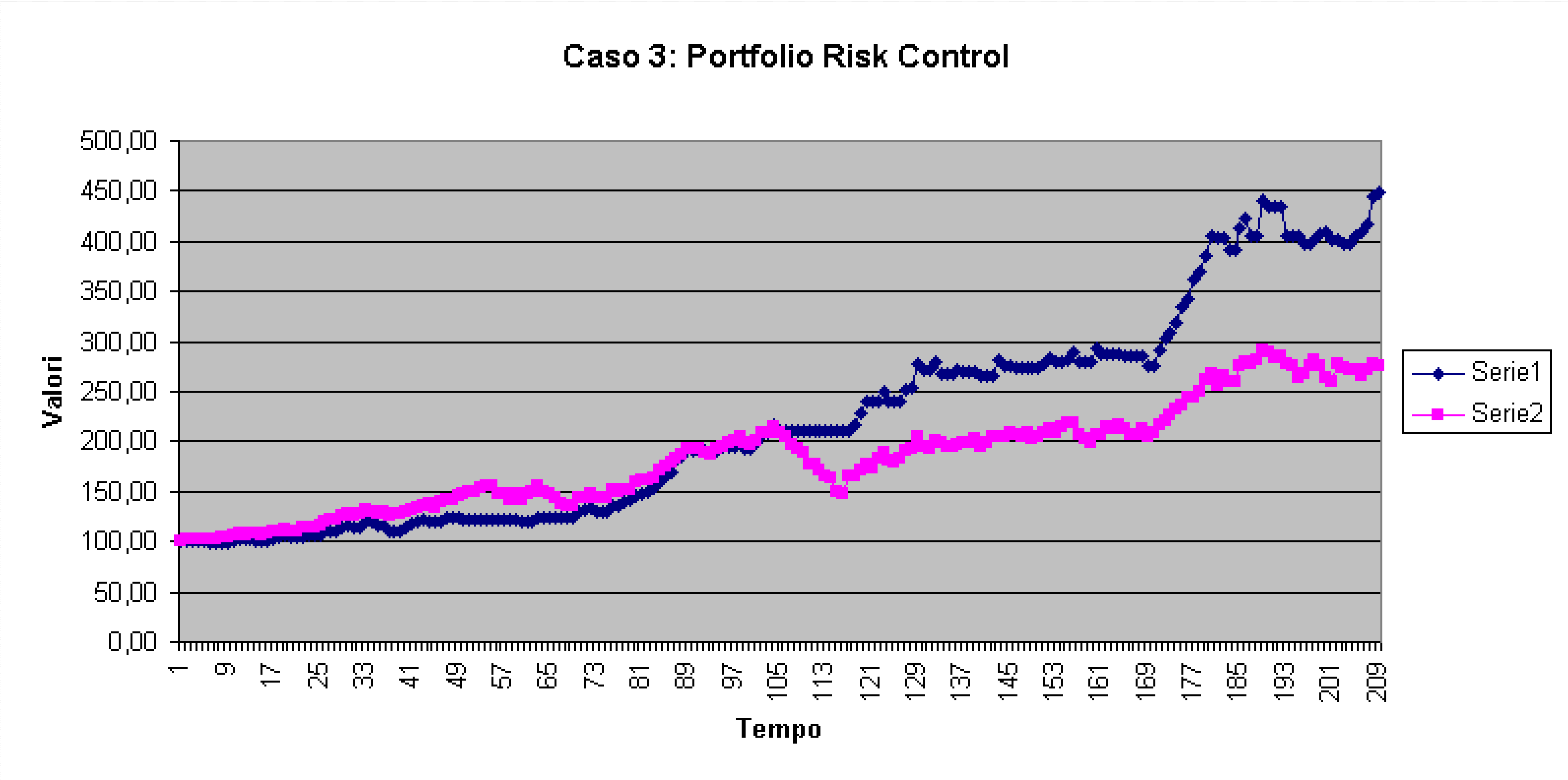
Contraindications

Model 2 needs to be refined in order to reduce maximum equity drawdown, which usually is very high in pure rotation strategies.

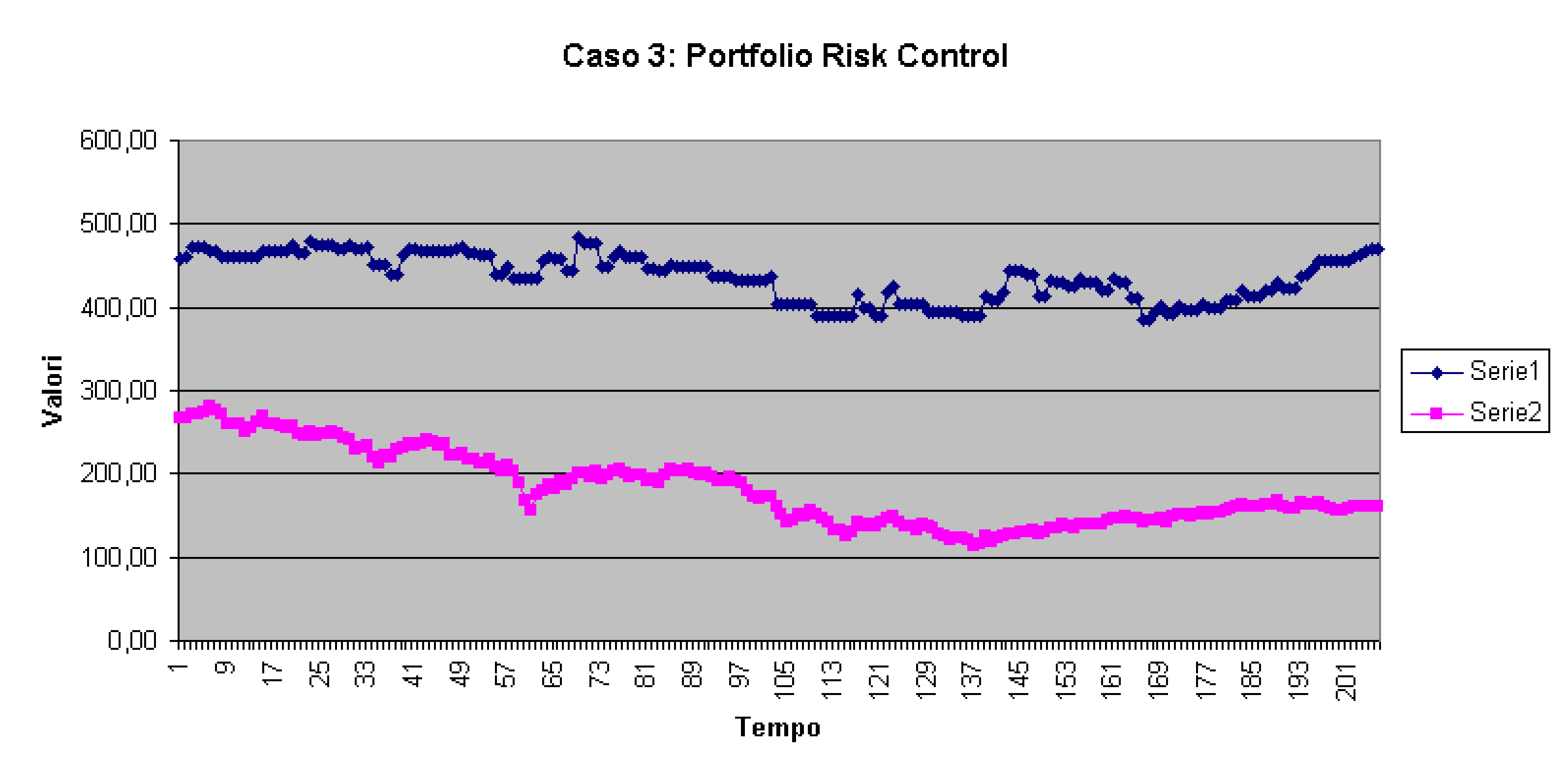
Case 3: portfolio global risk control

- We insert in case 2 a Portfolio Global Risk Control called "Equity Line Stop Loss". This system works on the portfolio global risk rather than on single securities / indexes;
- the risk control may be narrow or large.

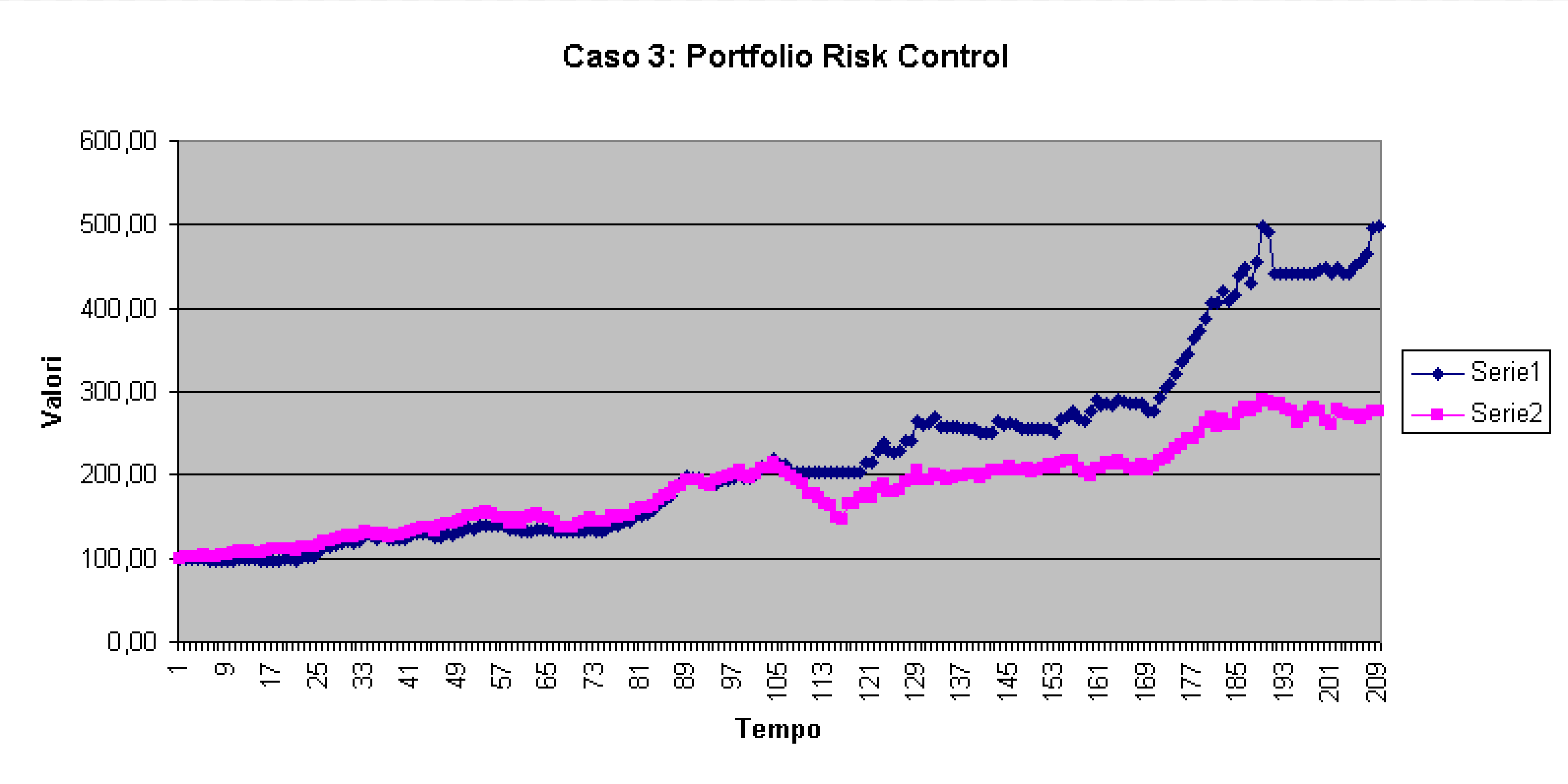
Case 3. Narrow risk control



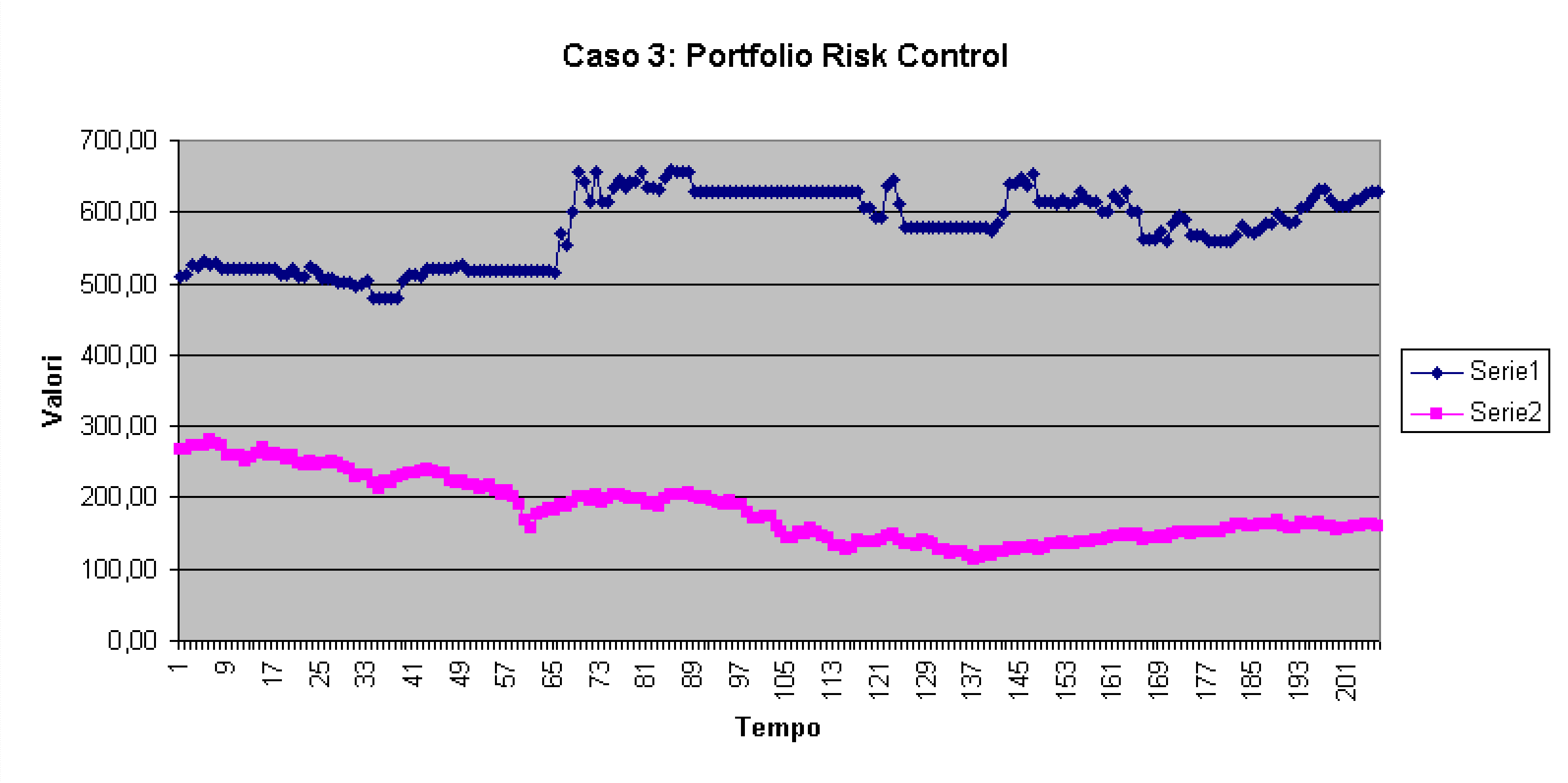
Case 3.
Narrow risk control



Case 3.
Large risk control



Case 3.
Large risk control



The true advantage …

… in this portfolio risk control approach is achieved when all the equity markets in the world go down simultaneously. This system enables the preservation of most of the positive returns gained in the bull markets, reducing the equity *drawdown* drastically.

The lack of trust in active management is at the root of the search for low volatility products

Nowadays' search for low volatility in hedge funds is exacerbated only because investors do not trust in the capabilities of the portfolio managers in controlling equity drawdowns and recovery times.

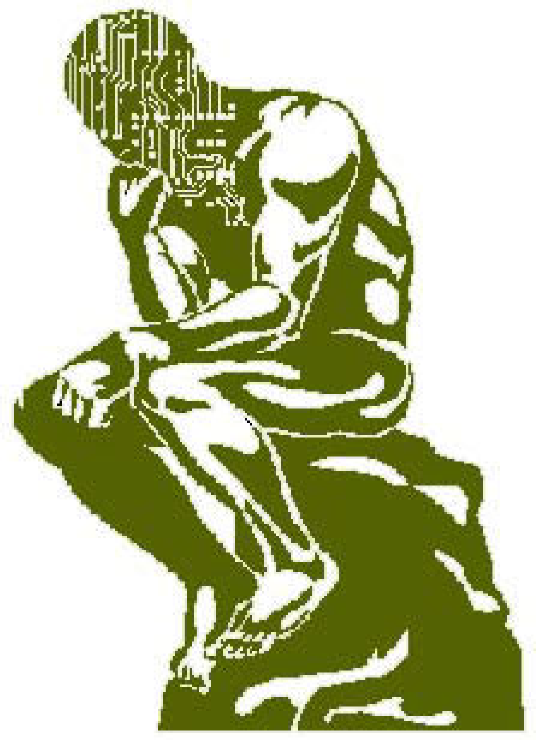
Weaknesses / improvement areas in the rotation model

- Purely educational model, simple indicators;
- only “in the sample” and not “out of the sample” simulations;
- need for sector funds without switching costs.

- The indicators can be improved to reduce the noise in the trends;
- the tolerance to exit signals from the portfolio can be increased;
- a second acceleration / deceleration filter.

Think about it

Paolo Sassetti



Costanza_Consulting@BrianzaEst.it