

Indexation & Investment

A collection of essays

european • asset • management • association

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June 2001

Published by
European Asset Management Association
28 Austin Friars
London EC2N 2QQ
United Kingdom

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Printed by Heronsgate Ltd

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Preface

Every portfolio requires the selection of individual investments. Indexation is just a mechanism for doing this. This mechanism became particularly popular when the result was a portfolio that then did not change in constitution and was in effect passive. Thus indexation and passive management became confused and often interchanged as a description of one particular way of constructing a portfolio.

This collection of essays was commissioned by the European Asset Management Association to shed light on some of the issues associated now with indexation. It is neither exhaustive nor representative of any particular viewpoint. The Association has published the essays without editorial interference.

It is timely to consider and, hopefully, stimulate a debate about indexation. Some governments are showing a tendency to oversimplify some of the benefits of portfolios or funds constructed in this way and commentators perhaps claim more for the technique than is inherent in it. I will touch here on only a few of the issues which are presently growing in importance.

- Index funds, by definition, are fully invested and will not protect assets in bear markets. In this sense the growing view that they are “safe” for retail investors can be dangerously misleading.
- Regulators seem to be seeking to create special exemptions for index funds from long established and prudent rules of diversification. Just because an index contains 25% in one company’s stock does not imply that it is wise to permit retail funds to hold 25% in one stock.
- Indices are becoming increasingly dynamic in their construction. There are frequent changes in their constituents leading index funds to be increasingly active. If one of their benefits was their passive nature (avoiding transaction costs) then this benefit is being eroded.
- There is an increasing proliferation of indices whose integrity may not be of an even standard. They are unregulated yet drive the composition of portfolios whilst managers who select other portfolio compositions are regulated. There is considerable pressure on those constructing indices from those seeking to have a particular stock or bond included.
- There is increasing gaming by active managers of the behaviour of index managers and the example of Dimensional Date may serve as a warning of the increasing risks in indexation.
- Increasing concentration of indexation strategies may be driving up the price of some stocks relative to others not in a particular index. This may be having an effect in the real economy in driving up the cost of capital to small companies.
- International index portfolios are built along similar lines to those in highly efficient national markets. This process may be less intellectually rigorous and help to fuel market bubbles driving investors into overvalued markets.
- The future of some companies involved in takeover activity may be decided on a passive basis by some index investors without exercising any judgement on the merits of the case affecting employment and other real economy variables.

In listing these issues I do not seek to criticise indexation but hope to open to debate some issues which are not frequently discussed. I am sure indexation will continue to play an important role in investment management and that this collection of essays will increase understanding amongst investors, investment consultants and regulators.

I hope you enjoy this booklet.

Donald H Brydon

President, European Asset Management Association

Active funds and index funds – which is best for investors

Florin Aftalion

Professor, ESSEC

The distinction between actively managed and index funds is particularly important from the investor's point of view. Managers of actively managed funds try to maximise their performance subject to the constraints which can be imposed on them and which determine the investment universe in which they can invest. Managers of index funds are obliged to reproduce purely and simply the performance of a benchmark index (or, at most, to improve on it slightly).

Investment in an active fund offers the advantage of being able to generate returns substantially greater than those of a benchmark index. On the other hand there is also the possibility of mediocre results. Investment in an index fund offers, in principle, guaranteed performance, not in absolute terms, but relative to the benchmark index or chosen benchmark.

Index funds are a relatively recent innovation. In 1971 Wells Fargo had launched an equal weighted NYSE portfolio for Samsonite pension plan. But it was only in 1976 that the first mutual fund, based on the S&P 500, was offered by the Vanguard Group to small investors. It ended that year with 14 million dollars of assets (and reached \$100 billion in assets last year). To demonstrate the advantage which index funds have Vanguard regularly compares the performance of actively managed funds against that of market indices. Figure 1, for example, shows for every year since 1972 the percentage of actively managed funds which have been beaten by a very broad market index. We can see that this percentage has only been less than 50% in eight years (out of a total of 24). In another study (not included here) Vanguard shows that over the last ten years, out of a total of 326 funds, only 53 had a higher total return than the S&P 500 index.

Index funds had been in existence for a long time before gaining favor with investors. Until 1993 less than 5% of monies invested annually in “mutual funds” were in this type of instrument. This percentage increased slowly to 12% in 1997. Then in 1999 there was a real explosion as in that year 38% of new investments was in indexed vehicles. The total monies invested in index funds from now onwards reached 7.5% of the total invested in mutual funds. In fact this change in behaviour was mainly because of institutional investors who in 1999 invested approximately 50% of their new monies into index funds, while private investors continued for the most part to be suspicious of them. The number of index funds created to date - 160 - also shows their success in the United States. It should be noted that a proportion of these are “exchange traded funds” quoted on AMEX, a hybrid product which are between units in open ended funds and shares.

The data (or advertising material) regularly published by Vanguard (and by its founder John Bogle) certainly contributed to the change in attitude of American investors. But they did no more than popularise the more detailed and rigorous results obtained by academic researchers since the sixties. The first two studies aiming to rigorously assess the performance of mutual funds appeared during this period.

The first of these studies was by William Sharpe (Nobel Prize for economics in 1990) who since 1966 has applied the tools of modern finance theory to the evaluation of mutual funds performance. His method consisted in taking account in calculating the ratio named after him, both of the average return of a fund and of its risk (expressed as the volatility of its return).

Comparing the average Sharpe ratio of 34 funds over the period 1944-1963 with that of the Dow Jones index shows that the former is significantly inferior to the latter. This outcome means that the overall performance of actively managed funds is worse than that of the market. But, as this comparison is based on averages, we need to ask if some investment managers don't regularly outperform the benchmark index while others underperform theirs. If there are thus “good” investment managers who more or less regularly outperform the market should it not be possible to pick them out on the basis of their past performance?

By showing that performance ranking of funds shows no consistency over time, in other words that past performance has no predictive power, Sharpe answered no to that question. Hence the confirmation that markets are efficient or, in other words, that all information is reflected in prices, and it is impossible, even for a professional investment manager, to outperform the market except by chance.

Soon after Sharpe's work that of Jensen was published in 1968 and 1969. This writer used the capital asset pricing model (CAPM) model to test whether, taking account of the risk (the beta) and the market return, a fund could generate a higher average return than the riskless interest rate. In a study of a sample of 115 funds over the period 1955-1964, with the S&P 500 index representing the market, he showed that only 39 funds had a positive alpha (or Jensen index), with only one of these being statistically different from zero, while 76 funds had a negative alpha of which 14 were significantly different from zero. Jensen concluded that investment managers as a whole were unable to choose winners when investing in shares of stock (i.e. to beat the market by "stock picking").

Since Sharpe and Jensen, the pioneers in this field, published their work, numerous other studies have come out which generally confirm and sometimes invalidate their conclusions. These studies have, in particular, extended the performance measured to other markets, such as the French market, introduced new methodologies, refining techniques used in the sixties, or raised problems which were not recognised as such by Sharpe or Jensen.

Among these problems we should note that of "survivorship bias". In the above mentioned studies, as in many others using the same methodologies, the procedures are applied to a group of funds which have been in existence from the beginning to the end of a chosen period. However, during such a period, some funds could have closed down or merged with other funds. This happens most often to funds which disappear because they don't attract sufficient investors as their performance has been mediocre. Not to take account of this phenomenon leads to overestimating the performance of funds in general by looking only to the more successful ones. Hence the need to adjust the average performance of surviving funds to take account of that of funds which have disappeared.

Performance consistency has also interested many researchers. Besides its theoretical interest, it has enormous practical importance. An entire industry is based today on the regular publication of performance rankings. Investors use league tables produced by specialist firms and published by the financial press to allocate their savings. Is such behaviour rational? In spite of applying more sophisticated methodologies than those used by Sharpe in 1966 recent studies yield somewhat ambiguous conclusions. The majority of researchers in the field believe that it is impossible to predict fund performance. This view seems to be shared by the Securities and Exchange Commission (SEC) which, in its publications for investors, warns them against the temptation of extrapolating past performance. However, some writers have drawn attention to some cases of performance consistency. This phenomena had either disappeared by the mid eighties or was attributable to the repeatedly poor performance of certain funds or to the fact that certain funds were invested according to "styles" (and "growth" or "value" indices outperform the S&P 500 for several years in a row before underperforming it). Consequently, it would be impossible today to predict which funds are going to outperform the market in the future.

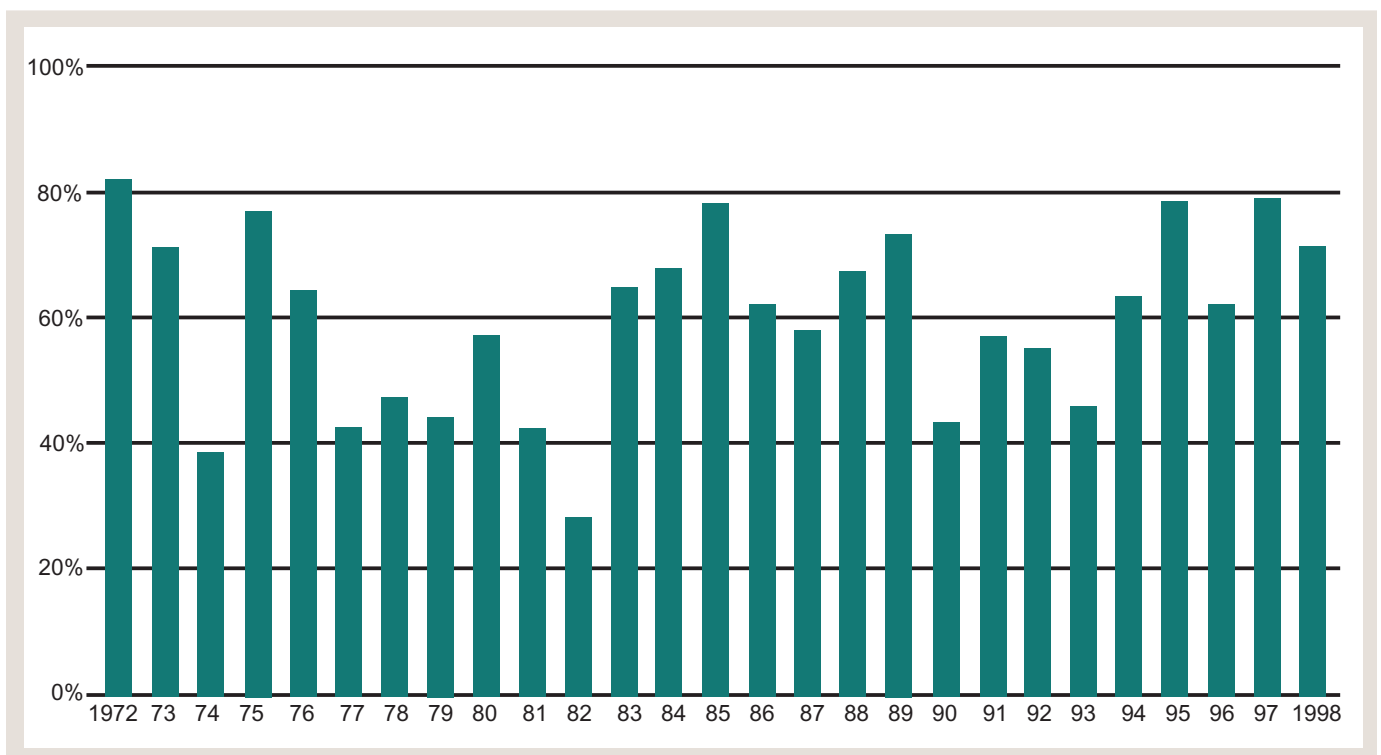
It is curious to note that despite all the research published to date and despite the efforts to "educate" the public carried out by a company such as Vanguard, index management has had only slight success in France and in continental Europe. As the results of the research into active fund performance do not differ from one side of the Atlantic to the other, all investors could enjoy the following advantages from index funds:

- Pay lower management charges as, following the example of the Vanguard group of funds, properly managed, index funds have lower operating expenses than actively managed funds (in the US 0.3% per annum for index funds compared with an average of 1.45% for actively managed funds).

- Suffer lower transaction costs due to portfolio turnover and the nature of markets where funds have to pay the ask when they buy and receive the inferior bid prices when they sell. These costs are close to zero for index funds compared with an average of 1% for actively managed funds.
- Take less risk because, although the average returns of actively managed funds are of the same order of magnitude as those of indices, the returns of individual funds are dispersed around the return of indices.
- Be able to carry out a precise diversification strategy by choosing index funds with sectoral, national or other specific indices.

If the use of index funds offers investors the advantages which we have just outlined, it poses a threat to savings institutions. The management charges which these currently make their customers pay (a gross estimate shows that in France the total management expenses for actively managed funds is probably in excess of 10 billion francs per annum) would to a large extent be denied them if index funds were to become widely accepted. This could explain the lack of enthusiasm which such institutions are showing for offering and promoting index funds.

Figure 1. Percentage of equity funds (“value” and “growth”) with returns less than that of the Wilshire 5000 index in a given year.



The effect of index management on the dynamics of price formation on stock exchanges

Patrick Artus, Antony Orsatelli

The development of index management, for reasons which will be made clear, increases the size and duration of stock exchange price fluctuations and the correlation between stock exchange prices and exchange rates.

Problem: index management can destabilise stock exchange prices

The development of index management causes investment managers to replicate the structure of indices in their portfolios. One can see intuitively that this is potentially destabilising (**Annex 1**): Without index management if for any reason (market accident, excess demand) the price of a particular category of shares rises, the increase would be considered in many cases as transitory. The forecast return on this category of shares would fall (because the purchase price would be higher), demand would fall, and there would be a downward correction in price. With index management, on the contrary, the weighting of this category of shares in the index increases, there is a rise in demand for these shares, so their price rise is sustained. In parallel the price of other shares would fall.

Furthermore, benchmarking limits the usefulness of information or of individual analysis by investors because there is obligatory replication; the slightest divergence in shareholdings considered by investors increases the volatility of markets.

Second problem: the destabilisation of exchange rates

Let us look further at the situation where investors are matching an index (using a benchmark); two destabilising mechanisms can be seen to be at work (**Annex 2**).

If stock exchange prices increase in, for example, the United States, investors increase the proportion of US stocks in their portfolio, and there are consequently capital inflows into the US, and appreciation of, the dollar.

If the dollar appreciates, because the indices are calculated in dollars, the proportion of the United States increases and, for the same reasons, the appreciation of the dollar is reinforced.

Finally, let us note the following mechanism: if stock exchange prices in the United States and the rest of the world rise in tandem, their weighting in the benchmark will not change, the overall value will increase, but this will not cause any capital flow, so should not have any effect on the exchange rate.

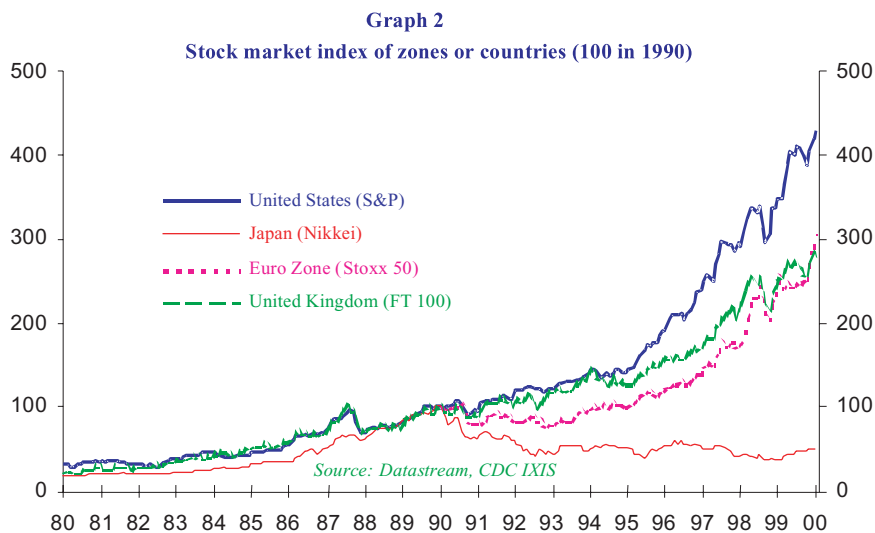
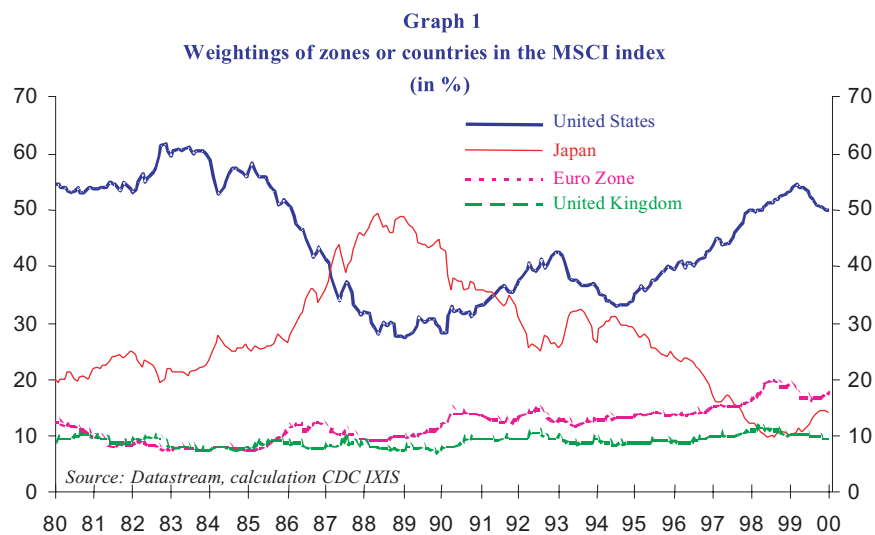
We would therefore expect index management (in the equity market) to lead at the macroeconomic level to:

- **bigger and longer stock exchange price changes,**
- **greater volatility in stock exchange prices,**
- **higher correlation between stock exchange prices and exchange rates.**

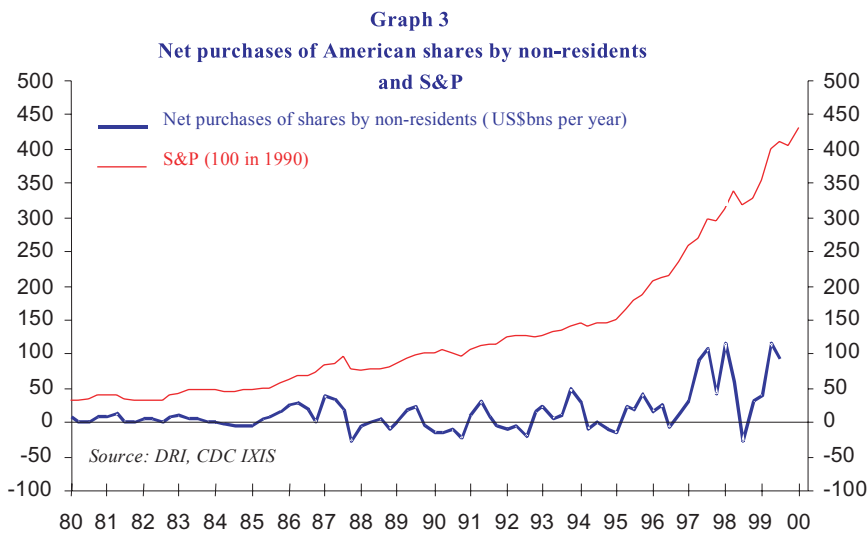
Empirical testing of intuitive views: benchmarking and stock exchange prices in the major markets

Graph 1 shows the weight of selected countries (United States, Japan, Eurozone, United Kingdom) in a simplified MSCI Index which includes only these four markets. **Graph 2** shows the movement of share prices in these four markets.

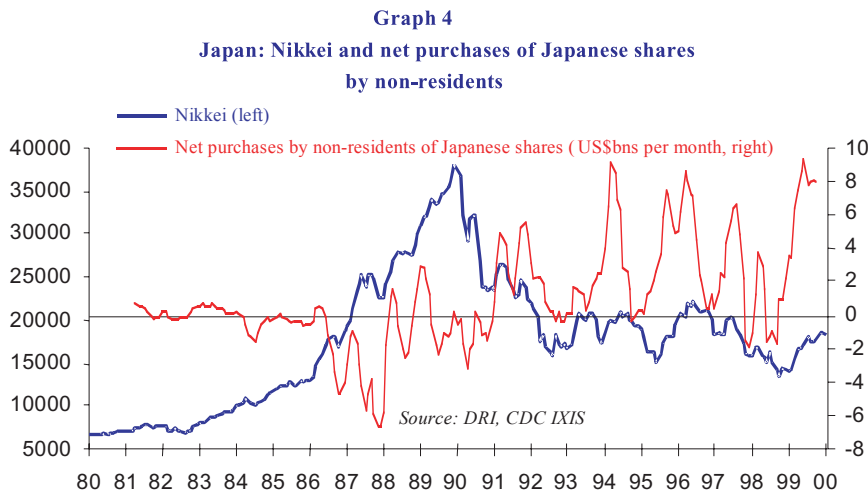
The American stock market rose fastest between 1995 and 1998, the European market strongly in 1998 and at the end of 1999, the Nikkei picked up in 1999, London rose fairly constantly: these movements are clearly reflected in the weightings of the markets in the index. If one goes further back, from 1986 to 1989 the outstanding feature is the rise of the Nikkei and, from 1990 to 1992, its fall. All this can be clearly seen in the estimated weightings in the MSCI index.



Graph 3 demonstrates that, since the start of the period of the big increases in American stock prices, there was a constant inflow of capital from non-residents investing in US shares. This is compatible with the hypothesis that the increase in the weighting of the United States in the benchmark attracted capital.



Graph 4 shows that, for recent periods in which the Nikkei recovered, there was also heavy investment by non-residents in the Japanese equity market.

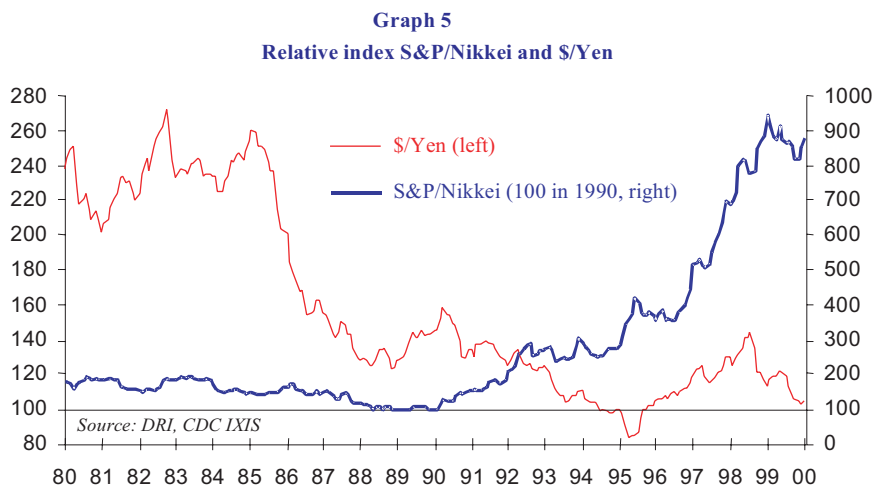


One can not, of course, prove that these price movements were a consequence of index management, but it is disturbing to see that recent periods of big increases in stock prices (95-98 in the United States, 99 in Japan) were reflected in index weightings and stimulated capital inflows from non-residents.

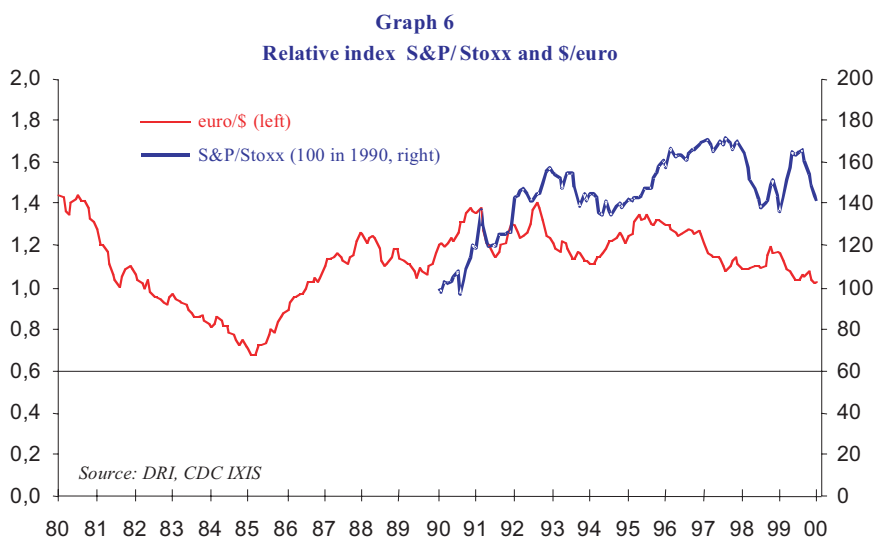
It is therefore likely that the hypothesis that a stock market rise (or fall) is amplified as a result of benchmarking is correct.

Empirical test: stock market indices and exchange rates

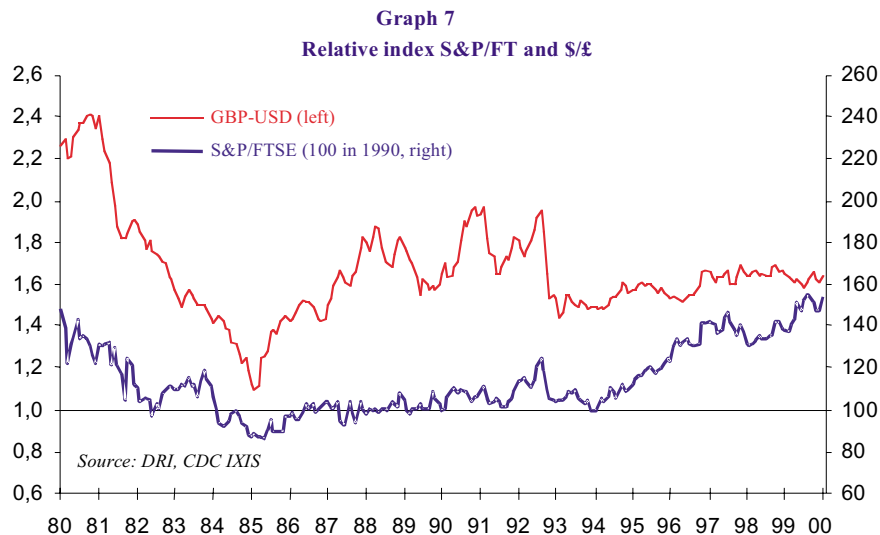
Graph 5 shows the relative value (base 100 in 1990) of the S&P and of the Nikkei (the ratio of the indices) and the US\$/Yen exchange rate. One can see the parallel between 1995 and 1998 of the high peaks of these two curves and their common trough since the end of 1998. On the other hand, in the eighties this characteristic is much less pronounced. All that can be detected is a slight movement in parallel during the period of dollar decline (86-88).



Graph 6 shows the same variables for the relationship between the United States and the Eurozone. The dollar appreciated relative to the euro in 1993, from 1995 to 1997 and in 1999; it depreciates in 1994 and temporarily in 1998. The highs of the dollar correlate with the times when the S&P was high relative to the STOXX, the lows of the dollar to the times when the opposite was true.



Graph 7 shows the ratio of the S&P to the FTSE indices and the \$ / £ exchange rate. The American stock market outperformed the UK stock market from 1994 to 1999 (they moved more or less in line before then). This coincides approximately with the period of sterling weakness relative to the dollar (1993-1999 when sterling was 20% lower than between 1987 and 1991).



The table below shows the correlation between the stock market indices in absolute or relative terms and exchange rates for the period 95-99 on a monthly basis.

Stock market / exchange rate correlations (95/99)

Relative Indices and exchange rates	
S&P/Nikkei and yen/\$	0,58
S&P/Stoxx and \$/€	-0,69 ⁽¹⁾
S&P/FTSE and \$/£	not significant
Absolute Indices and exchange rates	
S&P and yen/\$	0,55
S&P and \$/€	-0,93 ⁽¹⁾
Nikkei and yen/\$	-0,29
FTSE and \$/£	0,54
Stoxx and \$/€	not significant

(1) Negative when expressed in \$/€ terms

More often than not, the expected correlation is found: **a high of the stock market index of a country coincides with the appreciation of the currency of the country.**

Summary: benchmarking is a destabilising factor

This is the case because, on the one hand stock market price movements are self-reinforcing and, on the other hand, because stock market price movements and movements in the exchange rate are self-reinforcing.

Annex 1

Stock market dynamics under index management

We assume for the sake of simplicity that there are two sorts of shares (1 and 2). The number of shares available is assumed to be constant (N^1 and N^2). The share prices in period t are P_t^1 and P_t^2 . The index (the benchmark) for period t is therefore weighted:

$$(1) \quad \frac{P_t^1 N^1}{P_t^1 N^1 + P_t^2 N^2} = \lambda_t^1$$

for the first sort, $1 - \lambda_t^1$ for the second sort.

The returns of the two sorts of shares between t and $t+1$ are:

$$(2) \quad 1 + R_t^1 = \frac{P_{t+1}^1 + \Pi_{t+1}^1}{P_t^1}; 1 + R_t^2 = \frac{P_{t+1}^2 + \Pi_{t+1}^2}{P_t^2}$$

P_{t+1} is the stock exchange price in $t+1$; Π_{t+1} ; the earnings per share in $t+1$.

The wealth of investors at the beginning of period t is W_t defined as:

$$(3) \quad W_t = N^1 P_t^1 + N^2 P_t^2$$

If they are not indexed, this wealth is shared between these two sorts of shares according to their expected returns, which are calculated:

$$(4) \quad D_t^1 = d(R_t^1, R_t^2) W_t; D_t^2 = (1 - d) W_t$$

where d is a function **which increases** with R_t^1 , and **decreases** with R_t^2 , and D_t^1, D_t^2 the demand for shares of the two sorts; d is therefore a function which **decreases** with P_t^1 , and **increases** with P_t^2 .

The equilibrium prices in t are determined by :

$$(5) \quad P_t^1 N^1 = D_t^1; P_t^2 N^2 = D_t^2$$

If the investors are indexed, their wealth is distributed according with the weightings in the benchmark, i.e. :

$$(6) \quad D_t^1 = \lambda_t^1 W_t; D_t^2 = (1 - \lambda_t^1) W_t$$

Let us assume that in period t , at the point of investment selection, there is a favourable market accident which causes the equilibrium price of shares of sort 1 to rise. The consequence therefore, ex-ante, is an increase in P_t^1 which we will call ΔP^1 . Let us assume that this accident is short-lived (is not renewed in period $t+1$).

If there is no benchmark being used, the initial price rise of P_t^1 decreases the expected return of shares of type R_t^1 .

There therefore follows a **correction** which reduces the size of the initial impact on the price. **If a benchmark is being used**, the initial rise in P_t^1 causes λ_t^1 to increase, which causes investors to increase their demand for shares, which causes a further increase in price P_t^1 .

One can go further in this case. If P_t^1 becomes, because of an accident, $P_t^1 + \Delta P^1$, λ_t^1 becomes :

$$\lambda_t^1 + \frac{P_t^2 N^1 N^2}{(P_t^1 N^1 + P_t^2 N^2)^2} \Delta P^1.$$

As a result the demand for shares D_t^1 becomes:

$$D_t^1 + \frac{P_t^2 N^1 N^2}{(P_t^1 N^1 + P_t^2 N^2)} \Delta P^1 \quad \text{and } P_t^1 \text{ becomes : } P_t^1 + \frac{P_t^2 N^2}{P_t^1 N^1 + P_t^2 N^2} \Delta P^1 + \Delta P^1$$

and P_t^2 becomes: $P_t^2 - \frac{P_t^2 N^1}{(P_t^1 N^1 + P_t^2 N^2)} \Delta P^1$: the initial impact on the price is increased by the reaction of investors.

Annex 2

Index management and exchange rates

Let us assume that there are two stock market indices, 1 and 2, corresponding to two different countries: America and the rest of the world, for example. In period t , stock market indices denominated in local currency are P_t^1 and P_t^2 , the number of shares N_1 and N_2 (constant), the market capitalisations denominated in local currency $P_t^1 N^1$ and $P_t^2 N^2$; S_t is the exchange rate (number of dollars per unit of currency of the rest of the world); the market capitalisations **in dollars** are therefore $P_t^1 N^1$ (America), and $P_t^2 N^2$ (rest of the world). The index (the benchmark) is constructed in dollars.

The weightings are therefore :

$$\lambda_t^1 = \frac{P_t^1 N^1}{P_t^1 N^1 + P_t^2 N^2 S_t} \quad (\text{America})$$

$$1 - \lambda_t^1 \quad (\text{rest of the world})$$

- Let us first assume that by chance **the stock market index P_t^1 in America increases**, and becomes $P_t^1 + \Delta P^1$. With index management, the proportion of wealth invested in America changes from :

$$\lambda_t^1 W \quad \text{to} \quad \lambda_t^1 + \frac{P_t^2 N^1 N^2 S_t}{(P_t^1 N^1 + P_t^2 N^2 S_t)^2} \Delta P^1 W$$

and therefore **the dollar appreciates**.

- Let us assume that **the dollar appreciates** : S_t falls by ΔS . Therefore λ_t^1 increases and becomes:

$$\lambda_t^1 + \frac{P_t^1 + P_t^2 N^1 N^2}{(P_t^1 N^1 + P_t^2 N^2)^2} \Delta S$$

the dollar appreciates further.

When an index-tracking portfolio becomes risky

David Blanchard

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Summary

Some investors consider indexed funds as the best and least costly solution to implement their asset allocation. For these investors, selecting the right benchmark is a real challenge, since an inappropriate choice may create disappointment resulting from unexpected risks: lack of compliance with the actual needs, poor diversification and insufficient replicability, to mention but a few.

In this article, we review the main risks that an investor should take into account when applying a fixed income benchmark. These risks can be divided into two main categories; those that are inherent to the choice of a particular benchmark and those that relate to replication techniques or the skills of the asset management firm. We show that the risks inferred by the choice of a benchmark are the more important of the two and should thus be attributed the most weight in an investment decision. In analysing these risks, we hope this article will help investors and fund managers to avoid pitfalls and minimise these risks.

Selecting a fixed income index: three steps

1) Understanding the investor's needs

The most commonly cited reasons for an investor to choose an index-tracking fund are: the need to minimise transaction costs, the belief that diversification within a given compartment is preferable when there is no evidence that superior techniques or analysis are available at a reasonable cost, the simplification of the investment objectives, control over the asset allocation and the idea of being safe from the “crazy portfolio manager” syndrome.

In fact, the very first quality of an index-tracking fund should be the compliance with the investor's goals and constraints just like any other type of investment. The investor may seek various investment objectives such as ensuring regular income with low risk, maximising return while avoiding poor performances, reducing risk by sticking to a benchmark and allowing a sufficient time horizon, preserving capital by keeping the ability to return to short term or low risk investment in case of losses. Some of these objectives will obviously be incompatible with certain classes of indexes or even in some cases even with index tracking itself.

To check whether the index-tracking fund complies with the investor's goal and constraints, the fund manager and the investor may compare the acceptable level of risk in terms of volatility or maximum loss with that of the benchmark over a relevant time period. They may also focus on the types of risk the investor is willing to take and verify that the benchmark definition is suitable. When interest rate risks are required, the benchmark should match the target duration sector. When currency risks are sought, a multi-currency benchmark is selected and the level of hedging into the reference currency should be studied. If credit risk is chosen, a credit index (containing non-government issues or low rating papers) should be considered. Finally, fund managers and investors should question whether zero flexibility around the benchmark is acceptable; keep in mind that for certain benchmarks performance may turn negative.

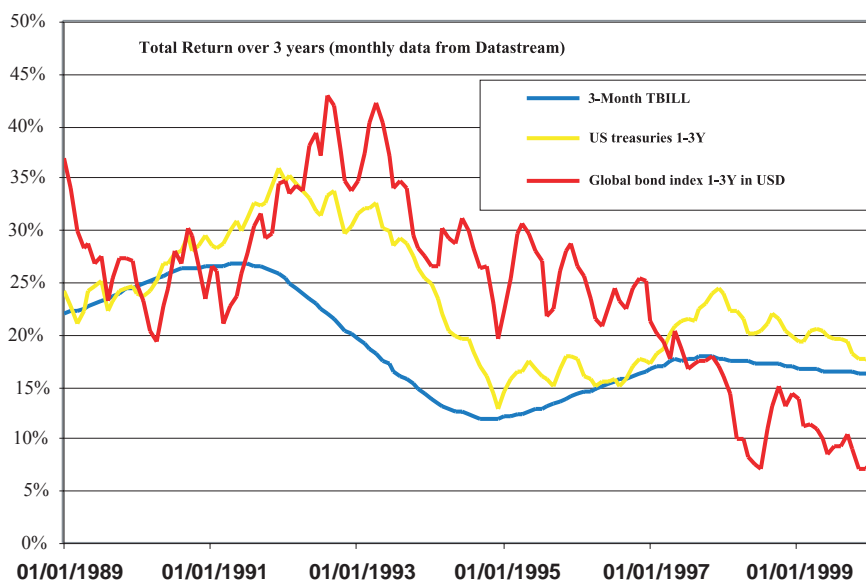
It is also important to scrutinise the benchmark structure, examining the decomposition by maturity, country, currency, credit rating, sector and industry, in order to make sure that nothing contradicts the investor’s objectives or appears to be misleading. As an example, some investors have recently sought diversification through credit indexes. In this case an important point to note is that the telecom sector has been invading EMU corporate indexes in the last few months. Consequently, one of the relevant questions to ask the investor is whether he is particularly interested in investing in the Telecom sector or whether his preference goes to the credit sector as a whole.

2) Meeting the investor’s needs by optimising the risk-return trade-off

There are several techniques for optimising the choice of a benchmark while ensuring that it will fully meet the investor’s objectives:

- *Historical analysis* compares the time series for the returns of different indexes over a set investment horizon. As an example, Exhibit 1 shows how to explore a selection of 3 year return time series for an investor that seeks a low risk USD investment with reasonable certainty to earn at least the 3M LIBOR rate per annum over 3 years. The chart shows that global government bond indices are likely to be discarded.

Exhibit 1: Seeking a low risk USD investment that yields at least LIBOR 3M



- *The traditional risk-return analysis* plots each possible benchmark on a risk-return chart in order to compare the trade-off for the individual benchmarks or composite benchmarks (obtained by combining benchmarks with low mutual correlation). As a second step, the stability of the selected trade-off with respect to different investment horizons, time periods and frequencies is carefully assessed. In general, relative risks are fairly stable and a historical analysis is sufficient whereas expected returns are not.
- *The expected return calculation* uses given forecasts for yields and exchange rates to compute a probable expected return for each short-listed benchmark. The investor can then check whether the current market conditions and the preferred scenario favour the use of a given index or not. The forecasts may be derived from economic studies or probability-weighted scenario analysis. Exhibit 2 shows examples of expected returns for different indexes based on a set of yield and exchange rate forecasts. Note, that the return of a global benchmark may be captured with a reduced G4 dataset for the sole purpose of selecting the correct benchmark.

Countries	Global Weights	Index Yield	Modified Duration	Bond indexes	Quarterly expected return				Cumulated 1/3/01
					1/6/00	1/9/00	1/12/00	1/3/01	
USA	28.7	6.49	5.47	Local Returns	1.745%	1.631%	2.981%	2.901%	9.576%
				Unhedged returns in USD	1.745%	1.631%	2.981%	2.901%	9.576%
				Hedged returns in USD	1.745%	1.631%	2.981%	2.901%	9.576%
Japan	33.7	1.66	6.09	Local Returns	-0.312%	-0.769%	-0.115%	-0.096%	-1.288%
				Unhedged returns in USD	-0.812%	-0.769%	1.267%	1.306%	0.973%
				Hedged returns in USD	1.216%	0.777%	1.477%	1.441%	5.001%
EMU	32	5.48	4.84	Local Returns	1.284%	1.386%	1.371%	1.356%	5.508%
				Unhedged returns in USD	7.678%	3.328%	3.752%	3.682%	19.687%
				Hedged returns in USD	1.918%	2.000%	2.003%	1.894%	8.047%
UK	5.6	5.26	6.75	Local Returns	-0.024%	-0.311%	1.424%	1.408%	2.507%
				Unhedged returns in USD	6.544%	1.630%	0.554%	0.585%	9.519%
				Hedged returns in USD	-0.060%	-0.362%	1.373%	1.320%	2.278%
Global 7-10Y index (proxy)				Local Returns	0.805%	0.635%	1.335%	1.313%	4.150%
				Unhedged returns in USD	3.051%	1.365%	2.514%	2.484%	9.743%
				Hedged returns in USD	1.521%	1.349%	2.071%	1.998%	7.121%

Exhibit 2: Quarterly returns for different bond indexes (Index data: Datastream)

3) Choosing a fixed income index provider

Finally, investors and fund managers should check whether the index provider is suitable for the type of benchmark used in relation to a range of practical issues: they should check whether the benchmark is available as a standard product, make sure the performance is available to both fund managers and investors via the usual data providers every day, assess the reliability of the calculation and the publication procedures, verify the pricing of illiquid securities and judge the quality of the service offered by the provider's technical support team. They must also check whether the index pricing procedures are sufficiently consistent with those of the portfolio. For instance, index data may be unavailable when the LIFFE is closed, but the portfolio might still run because the custodian has no bank holiday. This could artificially increase the average tracking error.

Replicating a fixed income index is not always an easy task

Once the index has been chosen, the fund manager still has to consider a number of difficulties in replicating the benchmark. These difficulties can be minimised by experience, but again, can also be avoided by a preliminary study of the index:

1) Getting all official index data on time

From a practical viewpoint, data such as detailed composition are needed well in advance to allow time to adjust the portfolio when the index composition is changed or when coupons are redeemed. The quality of such data depends on the reliability of the procedures followed by the index provider. Among the critical points to be watched, there are the beginning-of-the-month changes in the index composition, the delay in the publication of index values, the reliability of the computation of the index return, the quality of the pricing of the index and the transparency regarding the price sources used. When the fund manager has no possibility to recalculate the characteristics of the index by himself, e.g. the modified durations or the country weightings, he becomes somewhat dependant on the index computation. Unfortunately, given the number of securities included in a typical bond index – several hundreds – and the heavy processes involved in maintaining the index files, he often relies on the provider's computation only.

2) Making sure the right conventions are used

Fund managers must pay attention to the conventions used by the index providers when comparing their portfolios with the indexes. For instance, modified duration may be published using the annual or the semi-annual convention, a Japanese modified duration may be computed as a sensitivity to US yield or a sensitivity to simple yield, call features may be taken into account or not. Using the wrong convention when adjusting the portfolio may lead to significant errors in the calculation of the modified duration differentials versus the index, sometimes more than one point for modified duration on the Japanese market.

3) Bond indexes are more complex to replicate than equity indexes

Bond indexes are more complex to replicate than equity indices. This is not only due to the sheer number of securities involved. For both equity and bond portfolios, a perfect passive strategy cannot be easily implemented since the fund manager is required to adjust the portfolio whenever there is a deposit or a withdrawal. For a bond portfolio, adjustment is also required whenever the index is re-balanced or on major coupon redemption dates. Some index providers consider that the coupon proceeds are reinvested at the short-term interest rate, others in the components of the index, which is a more complex variant to be taken into account. To track a bond index as closely as possible, a fund manager can systematically replicate the modified duration and currency position of every standard maturity range and country. However, the resulting turnover may be significant. Moreover, the lag between the computation by the index provider and the portfolio adjustment by the fund manager may be an additional source of tracking error.

4) The easiest answer is sampling

To solve the problem of replication, sampling techniques are usually preferable. They imply the capability to have access to the entire index composition and to process it. Some domestic benchmarks are easy to replicate with a few bonds, by simply matching the weighted modified durations of the various maturity ranges in the benchmark, but for most multi-country indexes the tracking error needs to be measured, and then minimised on a daily basis with minimum transaction costs. The tracking error of the portfolio versus the index may be calculated by assimilating the component to maturity buckets of zero-coupon bonds, then by applying variance-covariance matrices of zero-coupon bond returns. Another possibility is to use risk factor models to simplify the computation of the tracking error. An optimisation process to adjust the portfolio with limited transaction cost is then used. Ultimately, the building of trackers should be standardised (one single model tracker for each family of portfolios tracking the same index) and centralised for cost efficiency reasons.

In most cases, the risks of replicating of an index stem from the use of external data, heavy and frequent computer processes and various manual procedures over which most investment houses have a poor control. It is certainly safe to believe that the fund manager's skill cannot help reduce these risks to zero.

When replicating an index becomes a nonsense

Some benchmarks are surprisingly not replicable either because they cannot be materialised using existing financial instruments or because these instruments are not available at the revaluation prices that are used by the index provider.

A money market fund indexed on the 3 month EURIBOR is supposed to yield the 3-month EURIBOR rate every day. To comply with this, the fund manager would theoretically have to buy a short-term instrument at the current 3 month EURIBOR rate every day and resell it at exactly the same price the day after.

This is practically impossible for at least three reasons:

- the EURIBOR rates will rarely stay the same from one day to another;
- bid-offer spreads are usually very significant on the money market;
- investment grade short term papers will rarely be offered at the 3 month EURIBOR rate

Given these constraints, the optimal strategy for replicating the 3 month EURIBOR benchmark is to invest gradually in a three month loan, at the EURIBOR bid rate, every business day of the first 3 months of the investment period, e.g. roughly 1/62 of the total amount to be invested every day if there are 62 business days in the first 3 months, keep these loans until maturity and roll them over. Such a strategy will offer a daily return equal to a 3 month moving average of the EURIBOR 3 month rate at maximum. The resulting bias – the difference between the benchmark and the strategy returns – will turn out to be in favour of the strategy in a context of decreasing short term rates and vice-versa as shown on exhibit 3.

Credit indexes are also hard to track under all market conditions. For instance, we have observed that most of the major US credit indexes have not taken immediately the effect of the Russian crises in August 1998 into account. We have measured a time lag ranging from several days to two weeks for most major credit indexes. Some fund managers have probably under-performed their indexes in the meantime.

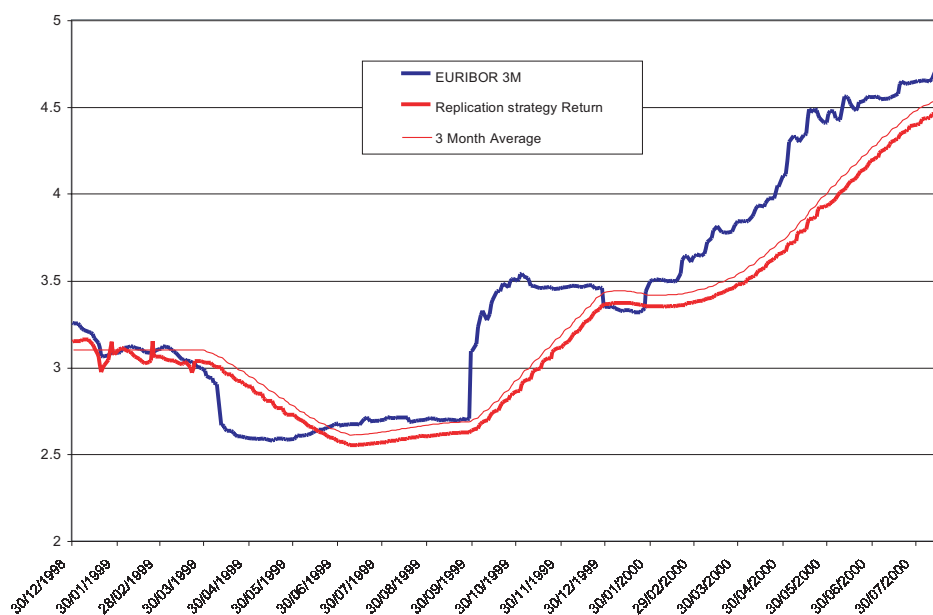


Exhibit 3: Replicating the 3 month EURIBOR (data from Datastream)

The bond markets are not centralised and traders provide most prices used for calculating bond indexes. This becomes crucial for illiquid non-government issues when volatility is high. One could suspect that re-valuation prices used for bond indexes are not always tradable prices and that credit issues are overpriced during bad times, which means a temporary under-performance for a fund tracking credit benchmarks.

In Euroland, where the credit markets are still at an early stage, fund managers using the available credit indexes are not currently guaranteed that the prices used in indexes are tradable, and therefore matches their own revaluation prices. This means that they are likely to be far from their benchmark at reporting times, especially if they invest in the less liquid issues in the index.

Conclusion

Some risks – including the risk of a disappointed investor – can simply not be eliminated from an index-tracking fund if the selected index has not been studied enough or if it turns out to be inconsistent with the investor's initial expectancies. Both investors and fund managers must carry out careful bond index analysis before investing in an index-tracking fund.

Bonkers bond benchmarks – An Accident Waiting To Happen

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Introduction

The world of benchmarks is often arcane, but these days the details seem to be becoming more and more important. Most of the attention has been focussed on equity benchmarks, but now there is a growing issue in the world of government bonds. Most everyone knows that the US and the UK governments are running surpluses and are busy going about redeeming government debt. Equally Japan is running a whopping deficit and is issuing bonds almost without limit on historically tiny yields. As a result, the share of Japanese government bonds in the popular benchmarks is rising sharply, while that of the US and UK is falling. And as investment managers view risk relative to published indices, global bond managers are either having to pile in to Japanese bonds on historically low yields while at the same time Moody's is considering downgrading Japanese government debt, or alternatively carry ever larger risk positions relative to the benchmark against which they are judged.

This paper looks briefly at these issues and concludes that we are looking at an accident waiting to happen. Investors would be well advised to consider changing their benchmark from a capitalisation weighted approach to one which reflects the currency consumption basket of their underlying liabilities.

Government Bonds are Different to Equities

We always need to be very careful before moving away from capitalisation weighted benchmarks. CAPM (The Capital Asset Pricing Model) remains today the only intellectually rigorous equilibrium asset pricing model of any standing. Under CAPM the world market portfolio dominates all others in expected risk-return space. Those who challenge the CAPM conclusion, that the market portfolio is the unique efficient portfolio that maximizes utility, often assert that the assumptions that underlie the theory are unrealistic or point to the fact that many investors do not in fact hold the market portfolio. Our view is that while CAPM is an abstraction of reality, its assumptions are reasonable and its conclusions profound and difficult to challenge. The world may not be perfectly efficient, but we need to have very good reasons indeed for moving away from the ideas behind a world portfolio. Any such moves should really be considered active management judgements, and should not be dressed up as anything else. For example, in the 1980's quite a number of investors moved their international equity portfolios away from capitalisation weights to GDP weights. In reality, this was a device intended to make respectable a decision to simply under-weight Japan.

Given what is happening in the bond markets are we going to see the same thing happen again in the world of fixed income, and if so, is there any better justification for it?

A Wealth Generating Market Portfolio

The clear theoretical prescription from CAPM is to own the market portfolio of investable wealth together with the riskless asset (or leverage) in a combination that maximizes investor utility. We believe it is worthwhile to think at a very fundamental level about what assets should be included in the market portfolio. The first pass at the investment opportunity set is to exclude assets that are not traded in functioning liquid markets that achieve price discovery on a regular basis. Venture capital would be an example of an asset that should, in concept, be part of the market portfolio, but fails to meet the investability criteria. Other assets such as privately held firms, private equity, many forms of real estate investment, and human capital would also fall into this category.

We next turn to first principles of economics to understand better the fundamental source of returns associated with the investable opportunity set. Investable return-generating assets are outlined in Table 1 and are each associated with one of the three primary agents that interact in the economy: *firms, factors of production, and governments*. We identify assets with their underlying economic role because this perspective sheds important light on the issue of which assets should comprise the market portfolio. In particular, we believe that what fundamentally drives an asset’s return should determine whether the asset plays a role in the market portfolio. Table 1 lists assets associated with each of the three primary economic agents and describes the fundamental force driving returns for each asset.

Table 1: What Drives Returns?

Economic Agent	Investable Assets	Fundamental Driver
Firms	<ul style="list-style-type: none"> • Equity • Corporate Debt 	• Profit motive
Factors of Production <ul style="list-style-type: none"> • Land • Capital • Raw Materials • Labour 	<ul style="list-style-type: none"> • Real Estate • Money • Commodities • None 	Value as inputs to the production process
Governments	<ul style="list-style-type: none"> • Government Debt 	Power to tax firms or factors

Returns are ultimately driven by just three fundamental forces:

- (1) The profit motive
- (2) Value in the production process
- (3) The power to tax

In our opinion the market portfolio of investable wealth should be comprised of firms, but neither factors of production nor governments. The logic behind this conclusion is that the fundamental driver of returns should be directly linked to profit-motivated entities – ultimately the only true form of wealth generation.

Firms clearly meet the profit-motivated criteria and represent wealth generation in its pure form. While factors of production (with the exception of labour) are “investable” and are typically priced by markets to reflect their value in the production process, factors generate expected return purely as inputs to production and not due to wealth generation in a fundamental sense. Similarly, while government bonds are investable and generate positive expected returns, the fundamental source of return generation is governments’ power to tax both firms and factors of production. Governments therefore play a role purely as a redistributor of wealth rather than a generator of wealth. Since governments are not a fundamental source of wealth generation we do not consider them part of the market portfolio of investable wealth.

If one accepts this argument then equities and corporate debt should make up the wealth generating market portfolio, but not government debt. Corporate debt needs to be included in order to gain full exposure to all claims on corporate cash flow.

The Harsh Truth About Government Bonds

When the weight of an equity market increases in the world index it can be for a host of reasons.

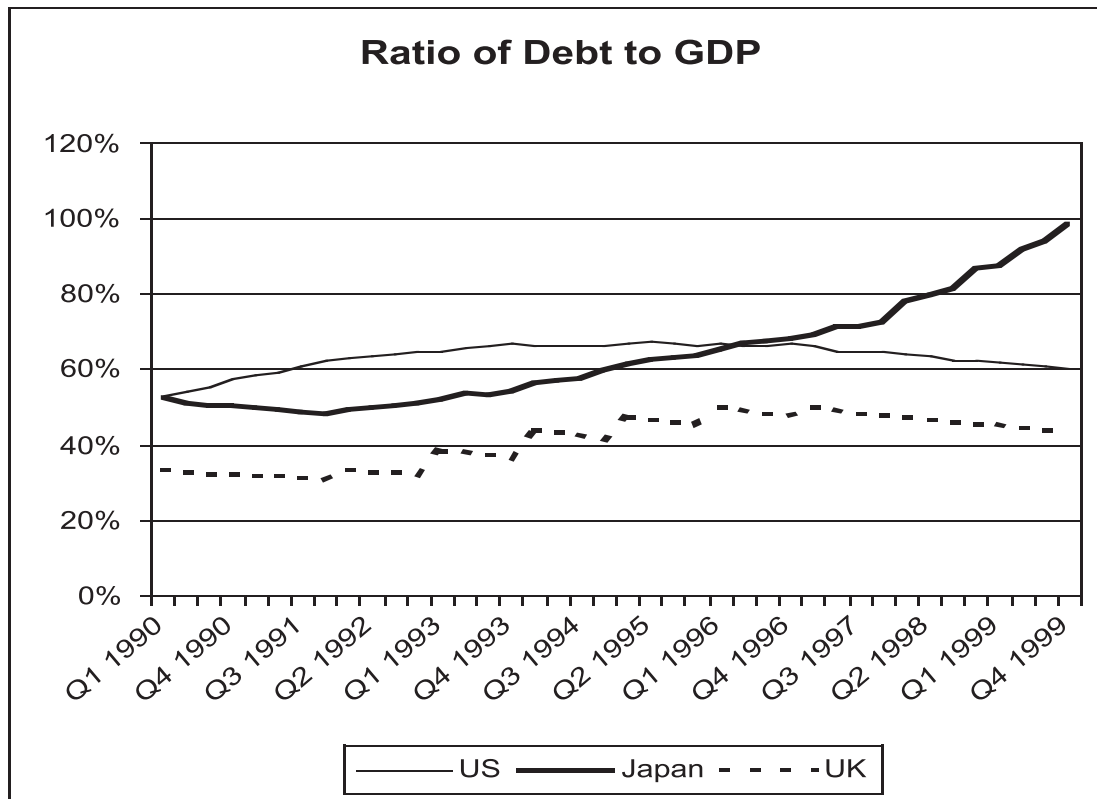
- Valuation levels may have increased
- Underlying wealth generation may have increased (earnings)
- Or companies may have adjusted their financing mix and issued more equity

When the weight of a bond market increases it can only reflect either increased relative net issuance or a shift in valuation through exchange rate or yield changes.

From a credit perspective, we need to remember that governments gain their ability to repay debt through their ability to tax and/or their ability to print money. Debt to GDP is therefore a fundamental measure of a government's ability to repay debt without recourse to printing money and therefore devaluing the "currency".

In the US and UK, we see both governments repaying debt (see Chart 1), thereby unequivocally improving their credit worthiness. What do we see in Japan? In Japan the national debt now exceeds 100% of GDP and is growing rapidly at around 10% p.a. Moreover, as the budget deficit exceeds the growth of nominal GDP, that ratio is set to continue to deteriorate. All of this would be fine (perhaps) if yields on Japanese government bonds were high enough to compensate. With yields though around 1.25% (versus 5.5% in the US and 5.0% in the UK) this hardly seems to be the case.

Chart 1: Debt to GDP



Source: Datastream and DRI

Real GDP growth in Japan is severely constrained by the decline in its working population. There is only so much that productivity improvements can achieve. For the budget deficit to grow at a slower rate than **nominal** GDP, which would allow the Debt/GDP ratio to decline, Japan will need some inflation. But wait a minute, what will rising inflation do to the price of government bonds when they yield only 1.25%? Japan therefore appears to be stuck between the proverbial rock and a hard place. If inflation is kept low the Debt/GDP ratio seems set to deteriorate at an ever increasing rate leading to progressive downgrades in the country's credit rating. Alternatively, Japan needs to let some inflation in to the system crucifying bond prices.

If this is all so obvious, presumably global bond investors are shying clear of Japan. Not necessarily. While Japanese bonds may be risky for investors, not owning Japanese bonds when they form such an important part of the popular benchmarks (Table 3) is risky for the investment managers who actually make the decisions! Global bond managers must either pile in to Japanese bonds on historically low yields while at the same time Moody's is considering downgrading Japanese government debt, or alternatively carry ever larger risk positions relative to the benchmark against which they are judged. This unpalatable choice raises the obvious question as to whether the benchmark should be changed.

Table 3: Country Weight in Salomon World Government Bond Index

%	Japan	US	UK
December 1990	18.7	48.5	6.4
December 1995	19.9	34.3	5.3
December 2000	27.12	26.0	5.27

Source: Salomon Smith Barney

Conclusion

We are always cautious about moving away from capitalisation weighted benchmarks. However, governments are not inherently wealth generators; they are wealth redistributors. A government's ability to repay stems entirely from its ability to tax or print money. Japan's credit position is deteriorating rapidly along with the increasing stock of its paper in the market and popular benchmarks. Ultimately there would appear to be no alternative except for Japan to allow some inflation in to the system, thereby boosting the growth of nominal GDP. Bonds on low yields are very vulnerable to both rising inflation and deteriorating credit.

The case for global diversification of government bond portfolios has always been somewhat weaker than for equities. While in an ideal world we advocate allowing active bond managers use of the full opportunity set of instruments (global bonds, currency, high yield and emerging markets), the question of the benchmark is another matter. Many US pension plans have elected to stick with a broad, US investment grade benchmark while allowing their managers the opportunistic use of other instruments. Others though have allocated funds to managing against a target of a global, cap weighted benchmark. We suggest that in the current environment such a benchmark may be far from optimal. A better alternative may be to select a benchmark more closely tailored to the ultimate consumption basket underlying the liabilities, be that a single currency or some mix of global markets.

The index providers are recognising the rapidly changing nature of bond markets today. Salomon Smith Barney have just introduced the World Broad Investment Grade Bond Index (WorldBIG). This index includes Government/Government Sponsored issues, Collateralised securities and Corporates. It has the happy side effect of reducing the weight of Japan from 27.12% to 15.6%. However, in a sense that is incidental. Of greater importance is that the index has been constructed in a manner that allows the user to slice and dice the index at will. Investors can therefore think about their own consumption basket and create an index tailored to their own liabilities, and reflecting their own preferences for governments and other investment grade securities.

One final thought, if bond benchmarks are indeed going "bonkers", then that is a strong argument in favour of active rather than passive management.

Acknowledgements: This article draws heavily on ideas published by Smithers & Co. Ltd and Eric Brandhorst of SSGA, and many helpful comments from colleagues. Responsibility for it though remains entirely mine.

The small free float of some quoted companies: Overview of the key issues for index-based portfolio management

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The general trend among stock market index publishers towards weighting indices by the free float and not by the total market capitalisation of the components of the index now seems so normal that one wonders why the trend did not start earlier.

This paradox can only be explained as a consequence of the still short history of stock market indices; compared with equal weighting or weighting according to the market price per share, using the number of shares issued seemed to be progress towards the construction of indices which were a more accurate reflection of the market. Market capitalisation weighted indices had more in common with the average portfolio held by investors.

When some people objected that strategic investors or governments formed a separate population, index publishers responded for a long time by pointing out the practical obstacles as regards weighting by free float. How could the free float be ascertained? Furthermore how could it be defined? Can not an apparently stable holding be sold in the market? In face of these problems, was there not a risk of objections, especially from large companies whose capital was tightly held, or from governments concerned about a loss in the value of national assets? Perhaps these difficulties explain the delay to 2002 in implementing the decision announced by Deutsche Borse AG to use the free float for weighting the components of the DAX index.

Nevertheless this attitude has become more and more difficult to maintain because of the problems which it causes for investment managers and for the market as a whole. As early as 1996, a paper by S. Thomas showed that the entry or exit of a share in the CAC 40 had a very significant impact on its price and that this effect was not completely absorbed until seven weeks after the change was announced.

With the increasing importance of indices in the operation of markets real distortions were in danger of occurring. Passive index managers were worried about changes in components of indices: because all the investment managers had to buy the same share in the same market on the same day, the short-term effect on the price of the share in question was increased by the relative scarcity of the share. One might think that this transient inconvenience would not justify radically changing the methods used in calculating indices but one needs to be aware of three further sources of problems:

- In recent years, the net demand by investors for equity products has been increasingly positive. The inflows of new monies for investment in index replicating products necessitated purchases in the market which brought about a price movement in the market which some considered to be artificial in the case of shares with a small free float.
- Comparison with indices has become a fact of life for all investment managers. Nowadays it is unusual for an investment manager, even an active manager, to be able to take the risk of diverging widely from the composition of an index.
- The shares in question often have very large market capitalisations. European regulation of UCITS, by imposing a limit on the proportion of the assets of a fund or SICAV which may be invested in securities issued by a single issuer, puts an upper limit on some of those shares which have a low free

float. This problem became even more obvious after the crisis in Asia and the “flight to quality” triggered off by this crisis, which focussed attention on blue chip indices at the expense of medium sized companies. Portfolio managers are in practice obliged to get round an inappropriate rule, for example by buying derivative products whose performance reflects the underlying security but which have been issued by a body other than that which issued the underlying security. The most sensible course would be to amend a rule which has become incompatible with developments in the market. These limits which no longer fulfil a prudential function should be abolished. This applies as much to active as to passive funds because, as we have seen, neither can completely forget about the composition of indices. But while waiting for this reform, weighting shares by their free float will cause the weight of some blue chips to fall below the regulatory threshold of 10% of the portfolio.

It is obvious in national indices that blue chips, especially telecommunications stocks where the state still has a significant stake, often breach the regulatory limit of 10%. Nevertheless, it is the international index compilers, and especially those of European ones which started the trend. Standard & Poor’s took the initiative in 1999 by weighting its European Euro Plus index by the free float, which was defined as comprising all holdings less than 5% of the company’s capital. But this new methodology was not applied across the board to all Standard & Poor’s indices. This innovation did not therefore resolve the problem.

The change in methodology of Dow Jones and STOXX Limited has a bigger impact.

On 3 July 2000 STOXX Limited announced that as from 18 September all its indices would be weighted by free float. The free float is defined as the total number of shares in issue after deducting block ownership. Block ownership is considered to be all holdings above 5% which are held by the state or other official bodies, by other companies with which there is a cross holding or by private individuals or families. Holdings by a single custodian are not treated as block ownership.

The new methodology affects not only the way of calculating the indices but also which shares are selected for inclusion. Market capitalisation, which was the main criterion for inclusion in blue chip indices and broad indices, will be replaced by free float.

Of course the effect of the change will not be immediate because the effect of the ratchet provision will help to stabilise the components: the level of free float needed to enter an index is higher than that below which a share included in the index is removed. At the annual revision of the blue chip indices which took effect on 18 September 2000, only three shares in the Dow Jones STOXX 50 and two shares in the Dow Jones Euro STOXX 50 were replaced by shares with a bigger free float. But in the case of exceptional circumstances in the next few months, such as mergers leading to the loss of quotation for some blue chips the criterion for their replacement in indices will be free float and not market capitalisation. We can therefore be sure that, if the current trend towards concentration and merger and acquisition activity which is prevalent among big European companies continues, free float will soon become an important factor.

For investment managers, taking account of the free float in indices will have the merit of reducing the volatility of the index at the time of changes in composition as the movement caused by pressure on liquidity will be diminished. This should then facilitate the use of indices as benchmarks as their robustness will increase: partly because shares which are widely held among the public will be selected for inclusion, partly because their weighting will be reduced in line with the block shareholdings which are not available on the market. The disequilibrium between supply and demand will be reduced and, with it, volatility. The benchmark role of indices will thus be strengthened.

But the new methodology will also lead to some reallocation of assets. Even if portfolio managers increasingly look at things from a European perspective, arbitrage between countries will continue to be important for the asset manager. As well as individual companies, it is worth analysing the effect of the new method of calculation on the relative weighting of European stock markets.

DOW JONES EURO STOXX 50 (in %)			
	Before the change	After the change	Difference
France	31,5	31,2	- 0,4
Germany	25,2	22,5	- 2,7
Netherlands	16,4	18,8	+ 2,4
Italy	8,9	6,7	- 2,3
Spain	7,6	9,6	+ 2,0
Finland	8,9	10,0	+ 1,1
Belgium	1,3	1,2	- 0,1
TOTAL	100	100	0

DOW JONES STOXX 50			
	Before the change	After the change	Difference
United Kingdom	29,6	34	+ 4,4
Germany	15,0	11,5	- 3,5
France	14,3	12,3	- 2,2
Netherlands	10,9	10,7	- 0,2
Switzerland	10,6	12,1	+ 1,5
Finland	6,2	7,2	+ 1,0
Italy	5,6	3,5	- 2,1
Spain	4,2	4,6	+ 0,4
Sweden	3,7	4	+ 0,3
Total	100	100	

Germany and Italy lose out as a result of the change. The proposed German tax reform, now that the veto from the Bundesrat has been lifted, should however lead to the unwinding of numerous cross-holdings which will now take place without incurring capital gains tax. Germany's stock market position should therefore improve as a result of the reform.

In any event these parameters will have to be taken into account when managing portfolios. Use of the free float will without doubt be a factor in accelerating the trend towards unwinding cross-holdings which has been evident in Europe for some time now.

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The Hidden Risks of Indexing

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Deutsche Asset Management

What logic can demonstrate is that not everybody, nor the average person can do better than the comprehensive market averages.

Paul A. Samuelson (1974) “Challenge to Judgment”¹

When Samuelson presented his “challenge to judgement” in 1974, the world of active managers was intact. While passive investing had already come into existence in 1971, its market share was virtually nil, and the common belief in the concept of active management was still strong.

Today, more than 25 years later, things look radically different. Active management is under immense pressure as disillusioned investors shift more and more money to index funds. As a consequence, active investment management has become a loser’s game²: Avoiding grave mistakes has become more important than coming up with spectacular winning bets. Driven by the agency problem between sponsor and portfolio manager, managing active portfolio risk has become a key issue and tracking error a major concern. This development has forced many active managers to become “closet-indexers”, mimicking the composition of the benchmark in their portfolios.

Disappointed by the performance delivered by their traditionally-managed, integrated active mandates, many institutional clients have moved towards a core/satellite approach in recent years. In this approach, a passively managed core portfolio is combined with aggressively managed active satellite portfolios. The satellite portfolios operate in markets expected to be sufficiently inefficient to give active managers an edge. The decision to establish a core/satellite approach is typically based on one or more of the following arguments:

- The majority of active managers do not outperform after costs.
- A passive core has low management fees, and its low portfolio turnover leads to low transaction costs.
- Passive investing is based on a sound theoretical foundation: The Efficient Market Hypothesis (EMH) and the Capital Asset Pricing Model (CAPM).
- Free float weighted indexing is guaranteed to beat the results of an average investor.
- Any active mandate can be seen as a combination of a passive core and a long/short active portfolio.
- A core/satellite approach maximises gains from specialisation

On first glance, the proarguments sound sensible and valid. Unquestionably, passive management leads to low management fees and low transaction costs; and there can hardly be any doubt that most active managers have underperformed in recent years. But there are serious problems hidden within passive investment and the core/satellite approach.

¹ Samuelson, Paul A. (1974): Challenge to Judgment, Journal of Portfolio Management, Fall 1974.

² Ellis (1993) defines a loser’s game as a game in which the ultimate outcome is determined mainly by the mistakes of the loser, while a winner’s game’s outcome is mainly determined by the winning actions of the winner. By this definition amateur tennis is a loser’s game, whereas professional tennis is a winner’s game. See Ellis, C.D. (1993): Investment Policy: How to Win the Loser’s Game, 2nd Edition, New York

Weak theoretical underpinnings

One powerful driving force behind the growth of passive investing has been the growing acceptance of the Efficient Market Hypothesis (EMH). The EMH seems to provide a sound theoretical basis for passive investing: If theory and empirical evidence both say markets are informationally efficient, why waste precious money on research or active portfolio management?

The problem with the EMH is that it is not an elaborate economic theory but is more of a simple classification system based upon empirical findings. Its few truly theoretical underpinnings are rather crude models. Samuelson's (1965)³ celebrated "proof that properly anticipated prices fluctuate randomly", for example, was based on the assumption of risk neutral market participants acting on costless information. Grossman/Stiglitz (1980)⁴ were first to point out "the impossibility of informationally efficient markets" when they showed that under costly information no equilibrium of informationally efficient markets can exist. Since then the EMH has been ridiculed, both theoretically and empirically.⁵

The CAPM is not a valid theoretical foundation for indexing either. Its main statement, that the market portfolio is an efficient portfolio, is a direct result of absurd assumptions and does not derive from economic analysis. Markowitz (1983)⁶, among many others, has pointed out this fundamental flaw: The efficiency of the market portfolio is critically dependent on the assumption that all investors optimise their portfolios based on homogenous beliefs about asset returns and covariances, while having unlimited access to either loans or short-selling and using the same investment horizon. Only because they all use the same approach to portfolio optimisation, the same input parameters, and because the assumption of unlimited borrowing or short-selling gets rid of differences in risk aversion, the aggregate of their individual portfolios, i.e. the market portfolio, will inevitably be efficient.

But what does this tell us about reality? The sad answer is: Nothing. Because in reality almost nobody optimises his portfolio based on Markowitz portfolio theory, let alone based on homogenous beliefs about asset returns or covariance matrices. Furthermore, most if not all market participants face short-selling or borrowing restrictions. As even slight deviations from the stated assumptions will lead to a breakdown of the CAPM, an efficient market portfolio would be a most improbable result of chance.⁷ It follows from this argument that there are probably many possible portfolios that promise better risk/return characteristics than typical benchmarks.

Text-book arbitrage and real-world rip-off

Many investors are well aware of a missing sound theoretical foundation for passive investing and instead base their decisions on a line of reasoning more similar to Samuelson's original one: As it is absolutely impossible that the average investor will outperform the market average, buying the market index at low cost guarantees above-average results.

Essentially, passive investing is a free-rider strategy. Whoever follows it must hope that enough market participants will still do security research and actively manage their portfolios so as to make market prices efficient enough to justify their not making this effort themselves, at least after deducting management fees and transaction costs.

³ Samuelson, P.A. (1965): Proof that Properly Anticipated Prices Fluctuate Randomly, *Industrial Management Review*, 6, pages 41-49.

⁴ Grossmann, S./Stiglitz, J. (1980): On the Impossibility of Informationally Efficient Markets, *American Economic Review*, 70, pages 393-408.

⁵ For a good overview, see Shleifer (2000): *Inefficient Markets: An Introduction to Behavioral Finance*.

⁶ Markowitz, H.M. (1983): Nonnegative or not Nonnegative: A Question about CAPMs, *Journal of Finance*, Vol. 28, No. 2, pages 283-295.

⁷ To add to the problems, the typical benchmark used in passive management is not a true market portfolio of all investable wealth but covers only a small subset of assets. Even within the framework of the CAPM there is nothing that says that such a subportfolio is likely to be efficient.

This is clearly absurd and shows the lack of evolutionary stability in the trend towards passive investing: It is absolutely impossible that everybody successfully follow a passive investment strategy, because if everybody did, the relative prices of securities would cease to reflect any information about the underlying issuers while the absolute prices of securities would be a mere result of the flow of funds. This can not possibly happen, because such a situation would offer enormous incentives to arbitrageurs to step in and correct the mispricings. But where exactly is the point when arbitrageurs will step in and stop prices drifting away from fundamentally justified relative or absolute levels?

The trouble, especially with equities, is that the information active managers typically try to acquire is information about the long-term outlook for figures like earnings, cash-flows or ultimately dividends. But this kind of information does not influence prices in the short run unless enough market participants come up with the same forecasts and start trading on them. If this does not happen, even an omniscient equity manager being long a stock is doomed to sit and wait until the higher dividends start dribbling in. Short positions are even more dangerous, as there is no natural limit to the extent and duration of an overvaluation. It can be quite expensive to be right in the long term if the market ignores the facts in the short term.

Taking this into account, it is logical that real-world active investors are not very likely to act like text-book arbitrageurs, eliminating any fundamental mispricings. In contrast, there are strong incentives to ride the wave until it finally breaks. As passive managers are forced to buy shares at any price, and as the flow of funds created by passive managers is easily estimated, many active managers have started to bet on this blind demand in recent years. They front-run passive investors by buying stocks that will be added to popular benchmarks, while shorting those that are expected, or known, to be dropped or reduced in weight. The blind demand and supply created by index funds almost guarantees a free lunch from these kinds of trades. Empirically, long/short strategies based solely on index adds and deletes have performed brilliantly in most markets worldwide.⁸ The magnitude of this effect is closely correlated to the rising market share of index funds.⁹

But blind demand and supply may not only influence index adds and deletes. The steady inflow of money from index funds can generally bid the prices of index members up: Jacques (1988) estimated the pay-off to the S&P 500 membership factor to be 4% a year for the period 12/1979-12/1987.¹⁰ It seems unlikely that results for the recent past would be much different: In the last 10 years the S&P 500 outperformed the Russell 2000 by 3% per year. In the last 5 years the outperformance was a staggering 9% per year. Has the “mega-cap effect” in fact been caused by an index bubble?

One interesting implication of these numbers is that managers who were benchmarked against the S&P 500, or some other benchmark favoured by passive investors, were chasing a very “fast rabbit”: As relative-value oriented ex-benchmark positions generally suffered from the negative flow-of-funds effect, most active managers had a negative bias in their performance.

To passive investors who simply indexed their funds to a typical large-cap index, these findings must be disturbing. They are ripped-off in the add/delete game and their index portfolios trade at inflated prices as compared to fundamentally justified levels.¹¹ If this is true, indexing as it is typically implemented is by no means a truly passive investment strategy but resembles a bet on survival or further increase of the

⁸ See Wurgler, J./Zhuravskaya, E. (1999): Does Arbitrage Flatten Demand Curves for Stocks?, Mimeo, Harvard University and Nadbielny, T.S./Kerr, P./Sullivan, M./Lazara, C.J. (2000): How to Catch a Falling Knife, Salomon Smith Barney Equity Research: Global Index, October 2000.

⁹ When recently its inclusion into the S&P 500 was announced, Broadvision for example, jumped more than 20% in one day.

¹⁰ Jacques, W.E. (1988): The S&P 500 Membership Anomaly, or Would You Join This Club?, Financial Analysis Journal, November-December, pages 73-75.

¹¹ This also applies to active managers who are restricted to hold benchmark assets only.

index bubble. If one is willing to believe that the trend towards passive management will continue, jumping on the bandwagon and buying a purely passive portfolio resembling one of the popular benchmarks is not a bad idea. But should this trend instead reverse, indexers, having committed themselves not to react to changing market environment, might become sitting ducks. Passive investing, like any free-rider strategy, has some serious drawbacks and dangerous dynamics built in.

Precious liquidity

The structure of any active portfolio can be separated into two components: A portfolio resembling the benchmark; and a second portfolio of long and short positions versus the benchmark.¹² This unassailable fact is the intellectual basis of the core/satellite approach: A passive core portfolio is supposed to deliver cheap market exposure, while aggressive actively managed satellite portfolios strive to generate active returns in markets believed to be relatively inefficient. Compared to a classic, active multi-manager approach, the main advantages attributed to a core/satellite approach are lower costs and the absence of overlap between the subportfolios.

Neither arguments are very convincing: Lower cost is not an inevitable result of a core/satellite approach, as it requires a greater number of portfolio managers. As long as those managers incur fixed costs, a rationally-priced integrated mandate should even be cheaper, everything else being equal. Possible strategy overlap within integrated mandates is mainly caused by inadequate guidelines and strategy selection, not the integrated approach itself.

One aspect that is typically overlooked by the advocates of core/satellite is liquidity: As a core/satellite approach segregates the core and satellite mandates, it becomes impossible to shift liquidity between them. For the active manager, this means that bets can not be increased at will but are limited by the size of the satellite portfolio.

Consequently the satellite portfolios face the risk of being forced to sell out their positions when facing their biggest opportunities: While the manager of an integrated bond mandate could increase his positions when spreads widen and become more attractive, a satellite hedge fund might be forced to cut losses. The sad story of Long Term Capital Management (LTCM) is a excellent example of this dilemma. An integrated mandate can add value because it allows the portfolio manager to keep, and even enlarge, his or her bets in times of market turmoil.

Summing up

As we have seen, the case for indexing in general and a core/satellite approach in particular is much weaker than current enthusiasm might suggest. Once the theoretical underpinnings are thoroughly analysed, the core/satellite approach loses a lot of its shine. As there is clearly a possibility for an index bubble, a naively implemented approach to passive management can be potentially dangerous. Therefore investors should critically evaluate the risks and rewards involved before jumping on the core/satellite bandwagon. Moving part of ones assets to a thoroughly analysed passive strategy can be a sensible decision, but in any case it should be an informed one.

¹² Strictly speaking this is a tautology as the long/short portfolio is not required to have zero value.

Risks of Indexation

Barry Riley,

Investment Editor, Financial Times

Active managers are fighting back against the index trackers who have taken market share away from them. Hopes are being expressed that stock and sector selection are about to achieve a comeback against the threat of the index trackers and their closet companions the benchmarked funds. There may be a strong element of wishful thinking. But the passive and risk-controlled funds are now so big that they present an increasingly vulnerable target.

Possibly the tracker funds reached their peak of performance in the late 1990s. Until about the end of 1998 they were near the top of the performance league tables even over short periods. At the beginning of 1999 several UK tracker unit trusts were in the top decile for performance over both 1 and 3 years. This prompted doubts, however, about the sustainability of their returns. Indeed, by late 2000 tracker unit trusts were back in the second or even third quartile. Even the promoters of tracker funds, after all, claim that their main advantages accumulate in the comparatively long term, mainly because of their advantages of low costs.

As for UK pension funds, figures from the WM Company show that, in UK equities, the average manager significantly underperformed the All-Share Index return in 1997 and 1998, by 0.8 and 1.6 percentage points respectively. By 1999 the active managers were back in line, however, and were soon pulling ahead, because on average the median return beat the index in 2000 by 1.8 percentage points, the biggest annual outperformance ever recorded by W.M.

The strong short-term performance of index funds during 1997 and 1998 was an indication of market distortions. Further evidence has appeared in the urgent moves by the main index providers to rejig their products. They are trying to replicate free floats – or the investable proportions of companies' share capital – more accurately. Narrow indices like the UK's FTSE 100 have also been troubled by the rapid turnover of constituents, reaching an acute pace in March 2000 when as many as nine of the 100 were replaced, mostly by new economy stars, some of which however did not survive the next quarterly rebalancing in June.

In theory, broad market indices are almost perfectly diversified. They bear the market risk, but no stock specific risk. The reduced risk claims assume, however, that there is no connection between the indices and the behaviour of investors at large. In practice, however, a significant degree of feedback has developed.

There have always been debates about the point at which the growth of indexation would interfere with the efficiency of market pricing. At an eventual stage of development the vast and lumbering tracker funds, doggedly pursuing their predictable formulae, will inevitably be vulnerable to being picked off by active managers. It was suggested that indexers would have to represent 50 per cent or more of total market capitalisation before such problems (and opportunities) would emerge. Because formal indexation in the UK, for example, has probably not gone above about 15-20 per cent it has been considered that market efficiency is unaffected.

Over the past few years, however, the adoption of benchmarks by institutional funds has become much more widespread. The purpose of such targeting is to control the volatility of returns compared to the selected index. The bulk of the institutional funds (British and American) which own around 65 per cent of the UK equity market are now benchmarked. Internationally the trend is also in that direction: the global index provider Morgan Stanley Capital International estimates that funds totalling about \$2,000 billion are benchmarked against its worldwide indices.

If you add trackers and benchmarkers together you get a more worrying picture of the scope for distortion.

The impact on the risks borne by ultimate clients is becoming more serious. Portfolio managers and consultants have developed techniques for reducing *relative* risks, either against the indices or, sometimes, the peer groups; but the knock-on effects on levels of *absolute* risk have become a cause for concern.

The potential impact became clear in the UK market around 1997 when several building societies demutualised and were floated on the stock market, notably Halifax. At the time of flotation only about 25 per cent of the Halifax shares were available for distribution to institutions, coming from the Halifax members who opted for cash rather than shares. But institutional investors, as a whole, required about 60 per cent of the equity to obtain a full index weighting. There was a big structural shortage, which fund managers could only attempt to overcome by bidding for Halifax shares regardless of price, or by purchasing proxies, such as Abbey National or, less precisely, the main clearing banks. Not only did Halifax's share price soar far above the pre-float predictions but the banks index surged from 5,500 to 8,800 in twelve months, reflecting a bubble in the sector.

At this point the investment bankers began to realise that there were potential opportunities to exploit these distortions. There were notable instances of cross-border mergers, such as Astra-Zeneca and BP Amoco, in which large tranches of overseas equity were incorporated in the UK indices. Perhaps the most spectacular case of this in the UK came early in 2000 when Vodafone bought Mannesmann of Germany (repeating its earlier strategy when it acquired AirTouch of the US). In the past such huge mergers might have been expected to create a glut of equity and generate share price weakness. In the modern, benchmarked, equity market, however, instant shortages are created and price strength results. Important consequences are that very large capitalisations are created – at one stage Vodafone represented 13 per cent of the All-Share Index – and price bubbles can wax and wane vigorously, so that Vodafone's shares peaked at almost 400p but had collapsed to under 250p within a few months.

In Continental Europe denationalisations provided the opportunity for bubble creation, especially in the telecommunications sector. Big domestic monopolies like Deutsche Telekom and France Telecom were listed, but with only small free floats. Because their entire market capitalisations were included in their index weightings serious shortages were again created for benchmarked institutions. The share prices bubbled up furiously until the spring of 2000, but then slumped by more than 50 per cent.

Such strategies were extensively repeated throughout the technology and media sectors. New companies could gain very large capitalisations in the headstrong environment of late 1999 and early 2000 and be swiftly promoted into the major indices. Very small free floats made it impossible for tracker funds to gain adequate exposure.

One curious development has been the invasion of the UK market by South African companies. After Billiton and South African Breweries, which benefited from the craving of UK institutions for weightings, there was the still more controversial arrival of Dimension Data in the All-Share Index in September 2000. In a bizarre auction for stock, in late afternoon trading, several tracker fund groups overpaid vastly for the shares, at an artificial premium of about 50 per cent.

The final, and arguably the most spectacular, examples of index distortion came with the vogue for pyramiding. Mobile telephone or internet subsidiaries of large companies were separately listed with very small free floats – an example being T-Online, an offshoot of Deutsche Telekom. In the UK Freeserve was hived off by Dixons, which however retained a stake of 80 per cent. Again, such spun-off businesses turned out to have very volatile share prices.

The major index providers have responded by redesigning their products. The main change has been to match constituent weightings much more precisely to their “investable” capital by excluding shareholdings locked away in the long-term ownership of governments, associated companies or controlling families. There are problems of free float definition here, however. There are also potential risks of share price volatility as the tracker funds attempt to rebalance their portfolios in line with the new weightings, moves

that will be exploited by front-running arbitrageurs, quite a few of whom already make a regular living out of the anticipation of quarterly constituent changes. Increasing market volatility has increased the opportunities here: the quarterly changes in Footsie constituents, for instance, involve many more companies than they used to.

If operators ranging from teams of speculators to conventional active managers can indeed make money from such techniques, it must be at the expense of investors in tracker funds. Such investors may find it hard to understand what is going on. Tracker funds may have paid the wrong price for Dimension Data, for instance, but so long as the same price was used in the calculation of the index they will have matched the index perfectly. The next day's decline in the index was too small to notice, and in any case tracking was again accurate. But there was a cost, borne by the clients.

When indices are broad and diversified such problems do not matter very much. But when there are a few dominant constituents the risks are higher. Curious changes happened in the FTSE SmallCap Index, for instance, in March 2000. There was a very large turnover of constituents as new economy stocks soared in value and entered the FTSE 250 Index, while an equal number of mainly old economy stocks moved in the opposite direction.

There were two interesting consequences. The published return on the SmallCap Index was unrealistically high. According to Elroy Dimson and Paul Marsh, two professors at the London Business School, the March rebasing had the effect of adding 8 percentage points to performance. This was unrealistic as a measure of the performance of UK smaller companies. To match the return on the SmallCap Index during the first half of 2000 fund managers had to turn over 80 per cent of their portfolios by value. In practice, there is not much formal tracking of the SmallCap Index. But the events illustrate the problems that can arise when tracking and benchmarking moves on from the broad market aggregates to specialist indices, including the technology areas which have recently become so popular.

All of these market phenomena related to index-tracking and benchmarking are of great interest to investment professionals, but the details are largely unknown to private investors. The latter are told that tracker funds are cheap and low in risk. They have been encouraged by the government, which has supported index-tracking as part of a campaign against the high costs of conventional retail investment products. Thus the Treasury has promoted so called "CAT" standards for Individual Savings Accounts, and is introducing Stakeholder Pensions. The constraints on the charges allowed for such products have given an important boost to tracker funds in the retail market place.

As the tracker funds grow in size, however, their risks are increasing too. An important consideration is the breadth of the index which is being tracked. Increasing numbers of retail funds are tracking the FTSE 100 Index rather than the broader All-Share Index which is the normal professional benchmark for the UK equity market. The difference may not seem all that great, because the Footsie's 100 constituents have 83 per cent of the aggregate capitalisation of the 766 companies included in the All-Share. But at the end of March 2001 the top ten stocks accounted for 54 per cent of the Footsie (and the top three alone for 28 per cent).

By any standard, therefore, a fund tracking the FTSE 100 Index represents a relatively concentrated portfolio. It is certainly not equally spread across 100 stocks. If, as seems likely, benchmark technicalities encourage still more megamergers at the top of the list the bunching of risks could become acute. This will apply still more to specialist indices, such as FTSE's TechMark 100 or its TMT Index. Already these trends towards high individual stock weightings in indices have caused problems in meeting the risk controls embedded in investment fund legislation, involving a 10 per cent ceiling on exposures to any individual stock.

A second area of risk relates to the possibility that the big, lumbering and formulaic tracker funds will

suffer from the continuous sniping of active managers. The assumption until now has been that, because of low costs, trackers will achieve higher returns than most active managers over the medium to long term. But as tracking and benchmarking grow in importance this may no longer be true. In combination, active fund managers and ingenious corporate financiers may erode away the cost advantages of the trackers, perhaps to the extent that they will underperform the average fund.

Finally, there are concerns about the volatility of the entire market. Indices used to represent a broad variety of sectors, offering a high level of diversification. But the rise of the new economy and the decline of the old economy has led to a concentration of sector risks. For instance, 50 per cent of the FTSE World Europe Index is accounted for by financials, telecommunications and information technology.

A basic rule in investment is that ideas work best on a small scale. When vast sums are brought to bear, however, the merits of the opportunity may be swamped, and the results may be perverse. Indices were designed to measure the performance of portfolios, not to determine the stock selections. So long as the indices tracked are broad and diversified the problems may be slight. Yet risks are inclined to creep up, unobserved.

Indexation and stewardship

A Ross Goobey

Chief Executive, Hermes Pensions Management Ltd

Indexing part or all of a client's exposure to one or more stock markets changes many traditional aspects of investment management. Others will address the questions of index membership, large individual exposures, or the relative performance of passive portfolios against actively managed ones. What this article will explore are the logical consequences of indexation on the stewardship rights and responsibilities of shareholders.

For many active managers, the idea that the fact of their clients' ownership of shares, albeit temporary, brings with it any obligation to exercise ownership rights is still a foreign one. If active managers make misjudgements about the strategy or management of the companies in which they have invested, their traditional remedy is to sell the shares, (sooner rather than later if possible), and move on to a more promising prospect. The next temporary owner of the shares to whom they have sold will be left with the problem, and should they be unwilling to seek change, then the shares will be sold again until a holder is found who is prepared to grasp the nettle. In many cases in the past, this has meant that company boards have not had any real incentive to change until either the company's situation is really dire, or a hostile bidder ends up with the shares. To be engaged in seeking changes in the shares of companies that they own is often, to an active manager, a confession of failure.

The passive, indexed manager has foresworn the luxury of selling shares of companies in the benchmark index. The client must feel, however, that 'something should have been done' about companies which lose all their value while in an indexed portfolio. Although the index manager has deliberately abandoned the attempt to create relative value in the portfolio, at least there might be an attempt to create, or retain, absolute value. The client's ability to meet the pension, or other, liability will be improved if the absolute return on all companies increases, and that will only happen over the long term if the effectiveness of management and their efficient use of capital is encouraged by shareholders.

If this premise is accepted, there then remains the substantial problem of how to execute such a strategy. Part of the attraction of indexation is the very low fee structure that is prevalent. It is almost impossible for a passive manager to find sufficient resources to do more than the very minimum in respect of the stewardship elements of share ownership. Looking at the governance and strategy of all 800 stocks in the FTSE All-Share Index demands serious analysis, not simple screening for shortcomings against a template. The same is true for equities held in overseas markets, which increases the universe to be monitored into the thousands. Inevitably, there is a filtering system needed to try to identify those companies where the greatest risk is apparent, and this is the 'box ticking' that annoys many company managements. It is reasonable to argue that the greater danger lies in a company that appears to obey the letter of the various codes, but acts entirely at odds with their strictures. Nevertheless, we have to start somewhere, and our experience is that there is a correlation between overtly poor governance and share price collapses.

Using a governance template is only the start of the process for an index manager. Those companies that fail several critical tests must then be assessed more deeply. For instance, it is not axiomatic that a company with the same person acting as Chairman and Chief Executive is badly governed, but it is a danger sign. Does the quality and independence of the rest of the board compensate for such a concentration of power? The answer to this question is usually 'no', partly because the central figure has appointed so many of its members him- or herself. Judgement is critical here, and the ability to be pragmatic, so that more senior members of the index-matcher's staff would have to become involved. It does not follow that a board member's powers disappear on their 70th birthday, and there is no purpose in forcing off someone who is contributing positively to the board on that day. However, beyond that age, true independence may be compromised, because a further appointment is unlikely to be achieved if the current

one is lost. That might undermine the ability to use the ultimate sanction of a non-executive director, resignation.

These processes could be carried out as well by active, rather than passive, managers. There must be something unique to passive managers to justify including this essay in a book on indexation. Whereas an active manager might decide to press for change while remaining a shareholder, in the vast majority of cases the problem is simply passed onto the next holder of the company's shares; the indexer has to devise some strategy to deal with recalcitrant boards. Indexers will tend to have a large percentage of the market under management. Since there are true economies of scale in indexation (particularly in replicated portfolios and for those who wish to enter or exit an index fund), there are relatively few suppliers to the market. Whereas there may be 100 companies offering active portfolio management in UK equities, there are perhaps only five or six serious players in index-matched UK equities, with, at present, two dominant suppliers. Fees are low, so that new entrants, starting from scratch, are unlikely to develop, since the critical mass required is too high a hurdle for a start-up to jump. This concentration of supply, in a market that has grown rapidly, suggests that there is a core of shareholders that might now represent between 10 and 20% of a company's capital, who do not have the option of selling stock.

The problem that indexers face is that there is no fee paid for stewardship, let alone activism, activity. Fees for indexed portfolio managers are appropriately low for what is generally a marginal cost/marginal revenue exercise where the marginal costs are minimal. But the marginal costs of leading a governance or activism strategy are high for the manager involved. Each campaign needs a manager that acts as co-ordinator and leader. In performance terms, an index manager does not worry about the so-called 'free rider' problem, where those shareholders who contribute nothing in time and effort still benefit from the efforts of others. Whatever the results of their intervention it will be reflected in the performance of the index, and there is no relative gain or loss against competitors in performance terms. This is not true in active portfolios, since some 'free riders' will benefit at the expense of those whose relative exposure to the stock may be lower. That still does not answer the question of how to justify the costs of intervention for one portfolio management company against those who spend nothing on such efforts, but receive the same fees. One way would be for the indexed portfolio managers to share such leadership roles fairly on a rota basis, but the attitude to intervention is very mixed among the large managers in the sector.

The solution we devised to justify our work to our own owners, the trustees of the BT Pension Scheme, was to set up a fund specifically to lead activism efforts among institutional shareholders, indexed or active. The distinction I would make between stewardship and activism is that the former monitors and persuades companies to follow the various governance codes, whereas activism is more interventionist - demanding more fundamental change in strategy, management, capital structure or governance. The fees we are able to earn from this fund cover not only the direct costs of this much more interventionist role, but the stewardship function, which we carry out across the whole portfolio. We could not do the activism without the fundamental stewardship.

Those at Hermes who are involved in the more traditional governance monitoring are members of most, if not all, of the burgeoning number of governance networks of institutions, both domestically and internationally. These contacts allow us to leverage our own shareholdings in questions of governance or activism. Other institutions seem to be delighted that we take on many of the burdens of activism and present strategies to them. They will then make up their own minds whether they want to support us, overtly or covertly, in our approaches to companies. One thing we have learned is that the development of a critique to present to a board, and the outline of alternative strategies, is a skill quite different from that of traditional fund management. What we are offering is 'free' management consultancy, and the team developing this has to have business and management experience as well as an investment analysis input. If we persuade our peer investors to support us, the core indexed portfolios we run directly are then supported by any active portfolios we manage directly, the other portfolios that our clients manage elsewhere, and the portfolios or other institutional investors. As a result, instead of speaking for under 2%

of a British company, we can talk to a board with the support typically of 25-30% of its shareholders. A company would be foolish to ignore that sort of representation. We make clear that the decisions have to be made by the board, but our ultimate sanction is to seek another board, either through the AGM, or an EGM, or, on very rare occasions, by seeking a bid for the company.

One critical factor that an index-matching portfolio manager can bring to this process is its permanence on the share register. Company managements are understandably sceptical about the solutions suggested by some recent arrivals on their share register. Some of these have engaged in 'greenmail' (the seeking of special payments to make them go away), or of encouraging a 'scorched earth' policy, whereby apparent short-term value is released at the expense of the long-term health of the company. Index-matching managers can realistically present themselves as the classic long-term investor. They will have been shareholders in the past, are in the present and will be in the future, long after current company management has retired. Their interest is wholly in the long-term absolute returns to be made from the company.

Companies have often interpreted the fact that the indexed manager is permanent as being a reason to ignore them in their shareholder relations programmes. What is the point of cultivating shareholders who will be present whether they approve of your strategy or not? The missing link has been the willingness of the institutions to take more notice of what is going on within the companies in the interests of their clients. That inaction is becoming increasingly inexcusable. The 1995 Pensions Act now requires UK pension fund trustees to state what, if any, their policy is on the exercise of their ownership rights. Not surprisingly, few trustee bodies have said that they have no policy in this area. Most have delegated the execution of their rights to their pension fund managers, but with the proviso that reports should be made regularly as to how these rights have been exercised. All fund managers, active and passive, have had to decide how to meet this requirement. Some still follow a policy of voting only where there are controversial items on the agenda at an AGM, but increasingly trustees are demanding that their shares are voted as a matter of course. This requires the fund managers to exercise some judgement on these matters, rather than vote blindly.

Even so, few managers, for logistical reasons, or even because of inherent conflicts of interest between the fund management and investment banking arms of some of the largest financial institutions, will want to intervene actively too often. The index-matching portfolio manager is perfectly placed to fill this role. Perhaps competition in this sector of the fund management industry will move away from simple price competition to a consideration of how, and to what effect, are the ownership rights of the clients exercised. The problem is that, whatever efforts are made, the outcome is still 'index' performance, and we will find it difficult to measure the effect on absolute returns. We are confident that this element of index matching management does add value.

Passive vs Active Asset Management: there is a middle ground

Jean François Schmitt

Head of Equity Management, Sinopia Asset Management

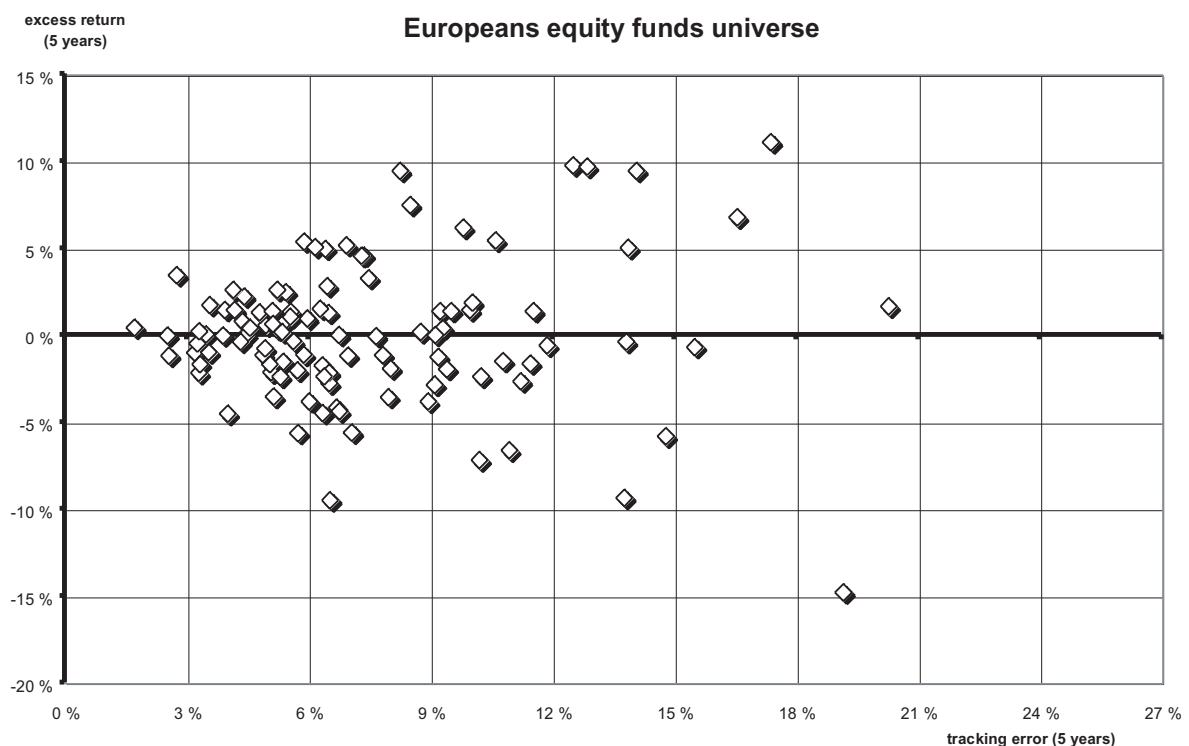
Patrice Conxicoeur

Head of Strategy, Sinopia Asset Management

The asset management world is by and large defined by a split between active and passive fund management, often mistakenly confused with a distinction between fundamental and quantitative fund management. To be considered as a passive fund manager, you have, of course, to replicate the index, but moreover you have to identify yourself as a passive manager. Of course, the higher art is supposed to be the active one, with higher risks and hopefully higher rewards. But is this split so relevant? Where is the frontier? A summary study of a funds database shows that a stable middle ground exists, composed of “active” funds with a stable and somewhat reassuring risk profile.

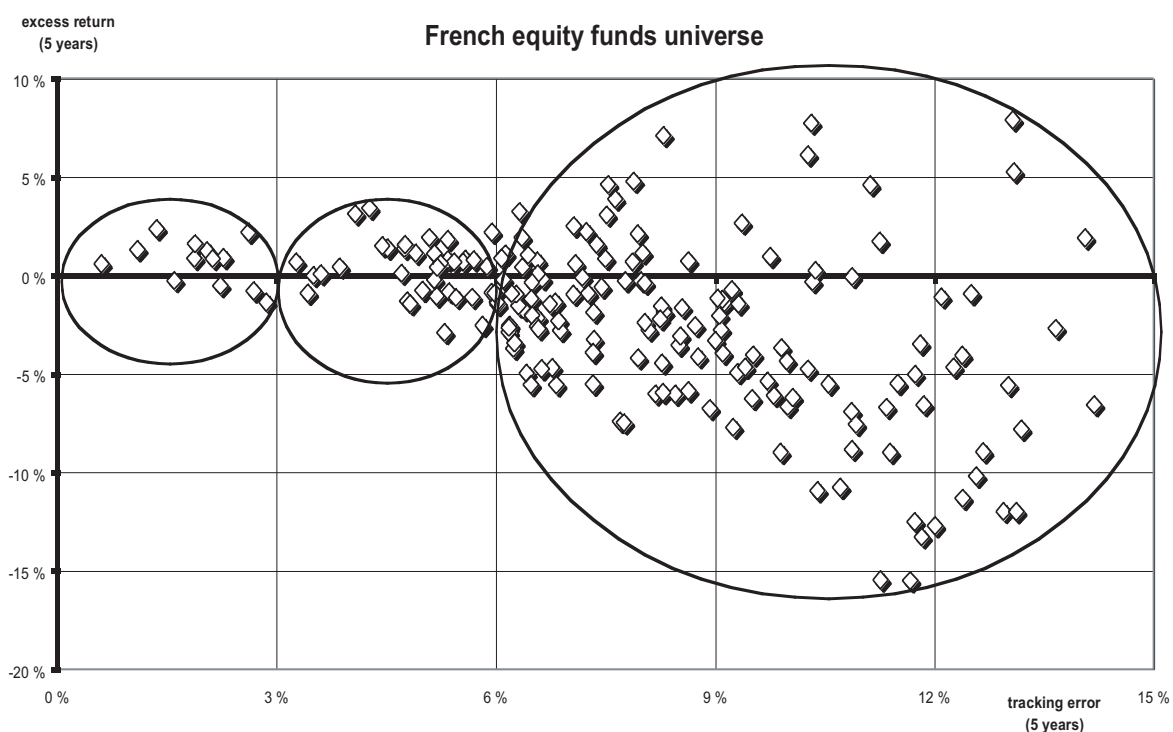
The industry has chosen its main tool to evaluate and control risk against a given benchmark: the tracking error (TE for short hereafter). It is also used to classify funds in active and passive categories. We study funds using this statistic. Our purpose is to find categories and to check their stability, using TE as the discriminating factor.

Using Micropal’s software and database, TE and return of all the European equity funds have been extracted (from 1 year to 5 years time periods). The shortcomings of such a database when it comes to measure statistics precisely such as TE are well known : accounting practices, cut-off time differences, currency conversion issues and different net asset value calculation frequencies conspire to make calculations “noisy”. What are the alternatives ? There are simply none, as such undesirable features affect all funds databases. The good news is that their effects tend to be stable over time. By experience, a simple rule of thumb indicates that such calculations are precise to a degree of about 2% as far as TE is concerned (see chart below). This important proviso being made, one must remember that TE is only meaningful as a discriminating factor with regard to a common reference. To look at funds together, we therefore try to eliminate funds with benchmark other than MSCI Europe / DJ Stoxx. Specialised funds such as growth or value funds have thus been excluded. We ended with 106 funds, shown in the following charts linking TE and excess return.



The spread of TE and of excess return are very large. It seems difficult to define groups graphically; a frontier seems to lie around TE at 6% . However the well-known opposition between active and passive management styles do not appear clearly, or maybe the passive management style is simply under-represented in the database. After more precise investigation of the data it appears that the lack of results comes from the variety of benchmarks for these funds. Several underlying benchmarks are actually used in this funds' group : for example, MSCI Europe (cap. Weighted), MSCI Europe (GDP weighted), DJ Stoxx (500 stocks), DJ Stoxx 50 (stocks); or specific ones like MSCI Europe excluding France, 50% France and 50% MSCI Europe, MSCI Europe ex-UK... Eliminating these differences is complex. Funds time series have to be statistically studied to link correctly funds and benchmarks; the real benchmark is not always defined precisely.

To avoid these traps as much as possible, we decide to focus on single country funds. We take French funds, as this is where our database is most densely populated. As previously, we try to eliminate funds with an obvious bias (eg towards a single sector). We ended with 198 funds with data over the past five years.



A quick graphical analysis shows a frontier around the six-percent level. Of course for tracking errors above this boundary, excess return dispersion is huge: from -15.5% to $+7.9\%$; this is in line with TE and risk definition. Benchmarking is not the key factor of the management style of this group. Conversely, under 6% level, risk and deviation from the benchmark are strictly controlled; benchmarking management style can be so defined. But the split between active and passive management styles does not appear in this classification. In our opinion an over 6% TE fund is clearly active. But a 5% TE fund cannot be classified as passive. Under the 6% limit, there are probably two groups: the index funds with a TE under 3% and a third group with TE between 3% and 6%. Active and risk control management are the main two characteristics of this latter group.

To confirm the “three groups idea”, the stability of these groups has been studied. Tracking errors for four sub-periods have been calculated. A fund is said to be stable within the classification if it stays in the same group for all the sub-periods. Various group limits have been tested and the best stability level is reached with limits set at 2.7% and 6.5%, as shown below in the table.

As can be expected the middle group is the one showing the lowest level of stability, since it is the only one where funds can exit or enter two ways. However even in this group the stability level achieved is very high (only 17% of the funds change category over an average period of 2 years).

Tracking Error limits	# of funds	% of funds	% of stability within a group
< 2.7%	12	6%	100%
2.7% < and < 6.5 %	47	29%	82%
6.5% <	115	65%	89%
Total	198	100%	88%

The above table and graph paint a rather clear picture : passive (or maybe “index hugging”) managers represent a stable minority in our sample, with, as might be expected, very small deviations from the index (in this example : the CAC40). The bulk of the sample is composed of active managers, representing 95% of the group. However within the active crowd, two tendencies stand out : the largest one (representing 2/3 of the total database) appear to be very active, with indeed very large differences in results, with high hopes being often dashed or vindicated. A smaller group (29% of the database) tend to have consistently a lower tracking error than the majority, with correspondingly less dispersion of results. Of course the boundaries we set in terms of TE can be the subject of much debate, but the stability of the sub-groups speak for themselves: we are faced with definite management choices. These choices are in our opinion clear enough to be comparable to a choice of management style.

So it appears that the traditional opposition between active and passive managers deserves a more precise qualification : there is a middle ground, whose existence cannot be explained solely by data inaccuracies or simple index-herding behaviour. Indeed such an opinion might be justified by very low TEs, but not by figures consistently around 4 to 5%. To generalise this finding to all asset managers is tempting but might warrant some further studies. Nevertheless the rationale behind the existence of this group appears simple enough to be convincing: in a context of fairly efficient markets, beating the index consistently is hard, and high volatility means that making the wrong calls can set you off significantly if your procedures for risk control are not tight enough. This middle group avoids the relative dullness of indexers, and minimises clients’ risks by monitoring closely investment risks relative to the benchmark. Needless to say, this is the style which we, at Sinopia, feel most comfortable with.

So eventually, what should we call this middle ground ? “Active” alone is clearly misleading to most clients, while any reference to the index does not do justice to the active investment process and its risk-control procedures. Let us offer one proposal: “benchmark active”.

The reality and consequences of indexation

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Economic Forces

In the last 20 years the capitalist economic model has become globally dominant. The underpinning principle of the “Price Mechanism” has proved itself superior to other philosophies such as the Centrally Planned Economy. Quite simply it has become clear that, in a complex and changing society, wealth is best created by applying market disciplines to economic enterprise. There is scope for argument about the amount of government control and regulation necessary to prevent market failures, to redistribute wealth and to husband the resources of the planet. Few, however, would now argue with the view that a regulated market economy is the most efficient economic model.

Products and Services

At the level of the individual product or service, the market model manifests itself through competition. In most industries, competition has been unremittingly relentless ever since the world’s industrial capacity recovered and outstripped pent up consumer demand in the early 1960s.

The effects of competition are demonstrated by a need to add value in each component of a product or service. Added value is the net result of the value of the component less its cost of provision. If a product, or a component of a product, is not adding value, competition will inevitably search it out and replace it with something more efficient.

One of the key management practices used in the search for added value is the science of benchmarking. Products and their components are benchmarked against best practice. Managements can then address weak areas, before the market does so through competition.

Technology has been key to this process. It is not however the driver of the process, it is an enabler. It has also quickened the pace of change and has thus radically accelerated the competitive process.

Naturally the forces of change are always resisted by powerful vested interests. Inevitably, however, when economic forces are allowed to operate, the existing order must genuinely add value or it will eventually be eclipsed.

Managing Management

Money management is centrally preoccupied with the economic competitive process described above. Paradoxically, fund managers have been less enthusiastic when competitive pressures apply in their own industry, but they are inescapable. The growth in indexation is a logical consequence. In the remainder of this article I will focus on Portfolio Management and describe the Reality and Consequences of Indexation against the background outlined above.

Portfolio Structure and Benchmarks

In the early days of fund management, portfolios were not designed to a specific structure. Rather, their overall structure evolved through an understanding of the sorts of assets which should be held in order to meet the liabilities against which they were invested, alongside a sensible attitude to the need for diversification.

As portfolios grew in size it became necessary to introduce some element of structure in the way in which they were managed. There were two reasons for this, as follows:

1. From the point of view of the beneficial owner, it was necessary to establish a framework so that the overall portfolio management decisions could be understood and monitored; and
2. From the point of view of the fund management team, it was important to subdivide the component parts of the investment decision process, so that they could each be allocated to specific members of the overall team.

In any event, there were two clear elements of the investment decision making process, as follows:

1. **Asset Allocation** – This is the top down decision as to what proportions of the overall portfolio should be invested in each asset class. The investment decision is what proportion should be invested in equities, bonds, real estate, etc., with a further set of decisions as to how these investments should, in turn, be allocated to the various national markets, such as the US, UK, Germany, Japan, etc.
2. **Stock Selection** – This is the decision as to which particular investments should be made in each asset class once the asset allocation decision itself has been made. Thus the decision is which particular equities should be held in the US equity market, etc.

Thus it became common practice for asset allocation decisions to be separated from stock selection decisions. The decisions themselves were then made separately, by specialists in each particular area.

The main drive for economic efficiency came from the introduction of performance measurement to the process. The performance measurers established a performance measurement structure which reflected the way in which portfolios were organised. They sought to measure not only overall performance, but also the performance in asset allocation and in stock selection in each of the markets in which portfolios were invested.

In order to measure performance effectively, performance measurers needed benchmarks against which to measure performance. Within each market they typically used stock market indices representative of the market in which the portfolios were invested.

This approach then led to the establishment of benchmarks for the overall portfolio, both at the asset allocation and stock selection levels. These were used both in the management of a portfolio and in the measurement of its performance.

This benchmarking and performance measurement provided the mechanisms by which competitive pressure in fund management was able to operate.

Indexation

Indexation is a stock selection technique under which, in a particular market, investments are selected to perform in line with a broadly representative market index, rather than seeking to outperform it. This typically means holding all or most of the stocks in a stock market index and managing them merely to reflect changes in the underlying index.

Academic work had suggested that the most efficient portfolio which an investor could hold within a market was in fact the entire market. Indexation based on a broad ranging stock market index was the closest approximation to this ideal.

Growth in Indexation

As performance measurement and the use of benchmarking in portfolio management took hold, the results often demonstrated that the average fund manager tended to underperform broad ranging stock market indices. This was a considerable surprise at the time, but can be easily rationalised. As a generalisation, investors in aggregate own the entire market. They cannot therefore all outperform the market. Since they incur transaction costs in dealing one with another, on average they will tend to underperform. I must emphasise that this is a generalisation because there are other influences at work (e.g. Government holdings of securities, foreign interest in particular markets, etc.) but, as such, it has not been unreasonable.

Since indexation was less costly than active investment management, competitive forces duly resulted in indexation gaining ground at the expense of active investment management.

In economic terms, individual active investment managers were not adding sufficient value to cover the cost of employing them. They were replaced by a more economically efficient means of managing part of the portfolio. Changes of this sort have been going on for many years. Indexing has grown significantly in the US, the UK, Japan and in other markets in which performance measurement is prevalent.

A common question is “how much of a particular market can become indexed?”. I think the question should be inverted. The question is not “how much can be indexed?”. It is rather “how much can be managed to add value?”. Given obvious capacity constraints on individual active investment managers and the difficulty of outperforming efficient investment markets, the implication is that indexation will grow significantly from current levels.

It has to be stressed that indexation is not an enemy of good active portfolio management. It is a means for flushing out poor investment managers. Active investment managers who can add value have nothing to fear from it.

Indexation has become a mainstream part of portfolio management. Its use alongside active investment managers is economically more efficient than having an entire portfolio managed by active investment managers.

There are, of course, many things to think about. Two important and topical issues are asset allocation and changing benchmark structures, which I outline below.

Asset Allocation

As indicated earlier, indexation is a stock selection technique. It does not provide an answer to the asset allocation problem. Note that many concerns about indexation (e.g. indexation will not work in a bear market, etc.) are based on this misconception.

How then does a portfolio manager approach asset allocation?

Typically this has been done by defining a neutral strategic asset distribution for the portfolio. The actual asset allocation is undertaken by making small deviations from the neutral position to seek to add value.

The neutral strategic asset distribution is usually established from analysis of the structure of liabilities against which the portfolio is invested. Alternatively, if the portfolio manager is instructed to seek to outperform the competing peer group, the neutral strategic asset allocation becomes the asset allocation of the average competing fund.

This neutral strategic asset distribution is immensely important in determining the ultimate return the portfolio will earn.

I believe that determining the strategic asset allocation of a portfolio is the most important decision for the owner of a portfolio.

Changing Benchmark Structures

As the world changes, historic benchmark structures are beginning to look anachronistic.

A specific current issue is the geographical subdivision of portfolios in a globalising world. This historic structure has led to concerns about undue concentration in portfolios as individual global companies have come to dominate their national markets. In addition, the national markets themselves are starting to coalesce.

These potential concerns about the way portfolios are currently structured should not be used as arguments for discarding structures entirely. The benchmarked structured approach is an integral part of the competitive environment. Rather, thought needs to be given to evolving the structure to one more suited to the new environment. Either increasing portfolio proportions invested internationally or moving to an approach of treating some investments as global multinational companies seem to be reasonable approaches to adopt.

Conclusion

The move towards indexation in portfolio management reflects the search for added value which is a key part of the economic market model.

There will always be issues confronting portfolio managers. At the moment strategic asset allocation and changing benchmarks are two key areas.

At the stock selection level, indexation offers competitive returns at low cost. This economic efficiency implies that index funds will continue to have a significant role in portfolio management and that they will sustain long term growth.

Market efficiency, index and active management

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Summary

The concept of the efficiency of markets in processing information, which was formally expressed in the theory of finance in 1970, is often presented as the ultimate justification for index management in the asset management industry. We show that in reality there is intellectual confusion about the meaning of this concept, linked to Gaussian assumptions which the concept has nothing to do with. This confusion has led to index management being justified by the concept of efficiency. When this confusion is cleared up, the concept of efficiency implies, on the contrary, active, not index, management and the importance of the part played by stock selection in determining performance.

It is generally accepted within the asset management community that the concept of the efficiency of markets in processing information, which was formally expressed in the theory of finance in 1970 by Eugène Fama, brought about the development of passive index management. In reality, close examination of the conditions prevailing when the concept was created, and of the understanding of the concept by the industry, shows that the relationship between the theory and the industry is not as simple as it at first appears. Another version of this seemingly causal relationship between efficiency and index management has been put forward. According to this theory the origins of passive index management lie not in the concept of the efficiency of markets in processing information but in the **reduction of this concept to a particular form of probability**: Gaussian.

This new hypothesis has been presented and championed in several works already published. The reader is referred to these works in order to prevent this article being too hard going or long. The references are given at the end of the article. These works represent all the bibliographical sources used in the validation of this hypothesis. The aim of this article is to present the conclusions and the methodology by which they have been obtained and also the practical consequences for the asset management industry.

The idea of the efficiency of markets in processing information was first postulated as a model in 1970. In his immediately recognised article “Efficient capital market, a review of theory and empirical work” published in the *Journal of Finance*, Eugène Fama defined the efficiency of markets in processing information as that characteristic of markets by which all available relevant information in the market place is used by participants and plays a part in price formation. The mathematical operation of “conditional expectation” was formulated to express the ability of participants to use all the information available and, from then onwards, the efficiency of markets in processing information became mathematically bound up with conditional expectation in relationship to a collection of information.

This idea of efficiency appeared in academic literature on finance and economics, and was presented in embryonic form in numerous papers long before Fama. For example, in reverse chronological order, the works of Roberts (1959), of Working (1956), of Hayek (1945), of Cowles (1933), and of Taussig (1921) hinted at this idea. It can also be found in the thesis of Bachelier (1900), and even in the 19th century French economist Jules Regnault (1863). The efficiency in processing information was not, however, expressed in terms of conditional expectation until Fama. The ethical aspect embedded in the hypothesis of efficiency is the idea of the “fair” distribution of wealth. This issue is raised by the question: are markets good redistributors of wealth, or, in other words, is the market allocation mechanism **efficient** in terms of information? Efficiency in processing information can be seen to be a very polymorphous concept.

For the asset management industry, the practical consequences of this idea of efficiency in processing information was clearly presented by Fama: if a market is efficient in processing information then any active investment management strategy would not succeed in generating a return above that of the market itself. In other words, however skilful the investment managers, however capable the financial analysts in making stock price forecasts, and the economists in predicting economic developments, the corollary of the efficiency of markets is that the performance of an actively managed portfolio, managed using these forecasts, will be no better than that of an index representing the market. A weaker version is given in Jensen (1978): even if there are niches in the market where prediction is possible, active investment management will nevertheless be unable to generate returns above that of the market because of the negative effect of transaction costs. Therefore the best policy to adopt, in order to get the best possible return on funds, is to get rid of investment managers and financial analysts, and to try to replicate the behavior of a market index automatically: to replace men by machines.

In this form, the efficiency hypothesis is directly connected to the social uselessness of active management. It is generally accepted that the tests carried out by Treynor, Sharpe and Jensen between 1965 and 1968 reinforced this idea. It is less well known that it was Cowles (in 1933 and 1937) who laid the foundations of this idea¹. It was this idea which led Samuelson to make his well known witticism that, in order to achieve the optimal allocation of human resources for maximising GNP, investment managers would do better to reallocate themselves to productive activity. This concept of efficiency lies at the heart of the performance measurement industry whose purpose is to test statistically the hypothesis of the ineffectiveness of active investment managers relative to passive index management.

This strange idea has been formally expressed by Fama as follows: the difference between the mathematical conditional expectation of the performance of an index portfolio and the actual performance of an actively managed portfolio can be modeled in terms of a white noise of zero expectation. The convergence of actual returns of an actively managed portfolio towards the expected returns of a passive portfolio means investors can be assured that the existence of a systematically positive spread is abnormal: in the same way that a negative spread will sooner or later disappear.

If this spread is interpreted as a measure of risk, then, as the old stock exchange saying has it, patience reduces risk. This saying is nothing other than the application of the central limit theorem to the outperformance of actively managed portfolios. For several reasons, which have to do with mathematical, theoretical, sociological and intellectual factors, Gauss's distribution was the first distribution to be used to measure the variations of this difference between the performance of the index and the performance of actively managed portfolios. According to this distribution the differences between the index and a real portfolio should disappear rapidly and should never be very large. From this point of view, one can see that the best strategy to adopt is automatic or semi automatic management. In the latter case, without going so far as to passively replicate a market index, one can envisage an investment process in which the performance of the benchmark index is the main determinant of return. This is the so-called "top down" approach of investment management firms. It is also the famous "consultants' triangle" according to which 70% of performance is attributable to the benchmark index (or strategic allocation), 20% of performance is attributable to tactical allocation, and only 10% is attributable to stock selection.

Sadly, what has appeared ever more clear over the last twelve or so years, is the dependence of performance on a very small number of days or a very small number of shares. If one removes 10% of the stocks in a portfolio for a given period, up to 90% of the total return of a portfolio is lost: the consultants' triangle is turned upside down and becomes a pyramid standing on its head. The underlying reason for this phenomenon is the nonconformity of actual stock market returns with normal distribution patterns and the existence of distribution tails which are not at all Gaussian.

¹See Walter [1999a] for evidence of these premises in Cowles.

Financial research has been trying to answer this question for a long time, whether it be with Lévy's stable distribution, dependence on variances (ARCH type models), or the theory of outliers.

With thicker distribution tails than envisaged in Gaussian theory a small number of shares can make all the difference between two portfolios because **specific** risk does not diminish as assumed by Gaussian theory². But awareness of the consequences of non-normal distribution for portfolio management was not instantaneous, and came about indirectly with the emergence of a wave of heterodox investment management relative to index management, called, in fact, "alternative management", or non index management. This is, to an extent, a sociological response by the industry to the problem of non normal distribution.

What then is left of efficiency? From the point of view of reflecting information in prices, the difference between the models depends on the nature of chance (in the sense of probability) which brings about the divergences between expected returns and actual returns. What changes as a result of non Gaussian distribution is not the economic validity of efficiency but its weakened form in terms of Gaussian probability. As the concept of efficiency has its origins in the theory of probability before it appeared in economics³, the change in the distribution of probability does not have any effect on the concept of efficiency. In other words this means that in efficient but non Gaussian markets the best policy is not to replicate a benchmark index but to choose good shares.

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³See Walter [1996] for a detailed justification of this proposition.

Index funds – The Retail Market: Governments and Regulators

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The debate about the merits or otherwise of indexation in asset management is difficult enough when related to institutional investors. In the retail market the issues can become very sharply focused indeed, given that many investors may have investment in only one or two funds.

In the retail funds market the natural attraction of apparently simple but wrong solutions has been taken up with enthusiasm by an unholy alliance of governments and regulators.

A key principle of authorised investment funds (UCITS) is that safety is provided for the investor by appropriate diversification. Questions then arise as to what diversification is “appropriate”. Presumably appropriate diversification is likely to remove stock specific risk as the major determinant of the portfolio’s performance. And here lies the first problem. When the UCITS Directive was first agreed in the mid-80s, working on data from the ‘70s, it was thought that something between 10-15 stocks would be sufficient to diversify stock specific risk. Therefore the minimum number of stocks which can be held in a UCITS is 16.

The Directive came into force in 1986 and in 1987 a research paper in the Journal of Financial and Quantitative Analysis suggested that it was more likely that 30-40 stocks would be required to diversify away stock specific risk. More recent research suggests that the number is more like 50.

The UCITS Directive achieves its diversification by the interaction of a number of rules. The main rule says that a UCITS fund may hold no more than 5% in any single issuer but that this rule may be relaxed for certain stocks which may have up to 10% per issuer. But the total of those stocks which constitute between 5-10% of the fund cannot exceed 40% of the fund. Hence the 16 stocks.

Ignoring the evidence of the need to increase the number of stocks to gain appropriate diversification, the European Union is just about to legislate so that up to 20% of a fund can be held in any one issuer and that this value can be increased to 35% by national governments. The only official opposition came from UK Treasury and FSA officials.

As usual the European Union is legislating with a rare combination of backward-looking ignorance and irresponsibility. Ignorance because the theoretical work is widely available. Backward-looking because the reasons for making these changes are said to be the concentration of various national indices. This at precisely the moment when, because of the advent of the Euro, indices and indexation are moving to a completely different footing with pan-European indices, sectoral indices and themed indices which can obtain appropriate diversification. Irresponsibility, because national governments have been prepared to sacrifice investor protection for a short-term, nationalistic advantage.

That is not quite the end of the story. Within even the most liquid indices such as the FTSE All Share we find that the volatility of individual shares and particular sectors has increased very rapidly over the past few years. So it appears that officials wish to see less diversification at precisely the moment when volatility is increasing. Maybe it was a Government official who, in the apocryphal story, went to his adviser and said, “I’d like that index tracker but if I have it without the volatility will it be cheaper?”

Even in the UK the Government and regulators have added to the misunderstandings in the index tracking debate in the retail sectors. First they have been transfixed by costs. In the UK the UK Treasury, the Financial Services Authority and the Office of Fair Trading have all suggested explicitly or

implicitly that Index Trackers are good for the generality of the population because of their price. The argument is circular. The price of index trackers in the retail market has fallen because they are commodity products. You can have no differentiation in the asset allocation or performance so the only differentiation can be in price. But that begs the questions as to whether the index is what people want or should have. All the market research shows that the majority of people investing their own money do not aspire to achieve the index return. They aspire either to beat inflation or to beat a bank account.

Officials have also been seduced by the 'passive' always beats 'active' mantra. Failing to notice that this is true in a small number of large-cap indices and is not true of the generality of markets. Recent research also suggests that largest source of under-performance by UK actively-managed funds is transaction costs in London, of which a large proportion is a Government tax!

For Government and official bodies to press an index tracker as optimal completely ignores the risk characteristics of the index and the risk characteristics of the investor. If a regulated adviser were to behave so capriciously they would almost certainly be fined by the regulatory authorities.

Index tracking can be best characterised as an asset management technique which buys and holds a portfolio defined in advance by its capitalisation. There is nothing wrong with that but it is nowhere near as innocuous or appropriate an asset management strategy for the generality of the population as Governments and official bodies sometimes pretend. It would be better for investors if officials left the issue alone until they understood some of the pitfalls hidden in the debate.

Fonds actifs et fonds indiciels: où est l'intérêt des investisseurs ?

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La distinction entre fonds gérés activement et fonds indiciels est, du point de vue des investisseurs, particulièrement importante. Les gestionnaires des premiers tentent de maximiser leurs performances compte tenu de contraintes qui peuvent leur être imposées, et qui portent, en particulier, sur le contenu de l'ensemble d'actifs financiers auxquels ils ont accès. Ceux des seconds sont tenus de reproduire purement et simplement les performances d'un indice de référence (ou, à la rigueur, de les améliorer légèrement).

L'investissement dans un fonds actif présente l'avantage de pouvoir générer des rémunérations considérablement supérieures à celles des indices de référence. En contrepartie existe aussi la possibilité de résultats médiocres. L'investissement en un fonds indiciel offre, en principe, une performance garantie, non pas dans l'absolu, mais par rapport l'indice de référence ou "benchmark" choisi.

Les fonds indiciels sont une création relativement récente. Le premier d'entre eux fut présenté au public américain en 1974 la société Vanguard. Pour démontrer l'avantage que présentent les fonds indiciels cette firme compare régulièrement les performances des fonds actions gérés à celles d'indices du marché. La figure 1, par exemple, qui indique pour chaque année depuis 1972 le pourcentage des fonds actions gérés activement qui ont été battus par un indice de marché large. Nous voyons que ce pourcentage n'a été inférieur à 50% qu'au cours de huit années (sur un total de 24). Un autre document Vanguard (non reproduit ici) montre que sur les dix dernières années, sur total de 326 fonds, seuls 53 ont une rentabilité totale supérieure à celle de l'indice S&P 500.

Les fonds indiciels ont mis longtemps avant de s'imposer sur le marché américain. Jusqu'en 1993 moins de 5% des sommes investies chaque année en "mutual funds" actions l'étaient dans des instruments de ce type. Ce pourcentage devait grimper lentement pour atteindre 12% en 1997. Puis, en 1999 ce fut une véritable explosion puisque cette année là vit quelque 38% des nouveaux investissements se diriger vers des fonds indiciels. Le total des sommes investies en fonds indiciels atteignait désormais 7,5% du total des investissements en mutual funds. En fait, le changement de comportement eut lieu essentiellement chez les institutionnels qui investirent en 1999 environ 50% de leurs nouveaux apports dans des fonds indiciels, les particuliers restant dans leur grande majorité méfiants à leur égard. Le nombre de fonds indiciels apparus à ce jour –160 – témoigne également de leur succès aux Etats-Unis. Remarquons qu'une partie de ceux-ci sont des "exchange traded funds" cotés sur l'AMEX, produits intermédiaires entre les parts des sociétés à capital ouvert et les actions.

Les informations (ou la publicité) largement diffusées par Vanguard (et par son fondateur John C. Bogle) ont certainement contribué à changer l'attitude des investisseurs américains. Mais elles n'ont fait que vulgariser des résultats plus complets et plus rigoureux obtenus par de nombreux chercheurs depuis la fin des années 1960. A cette époque sont apparues les deux premières études ayant pour but d'apprécier de manière rigoureuse les performances de "mutual funds".

La première de ces études est due à William Sharpe (prix Nobel d'économie en 1990) qui dès 1966 a appliqué les apports de la théorie financière moderne à l'évaluation des performances des mutual funds. Sa méthode consiste à tenir compte dans le calcul du ratio qui porte aujourd'hui son nom à la fois de la rentabilité moyenne d'un fonds et de son risque (exprimé par la volatilité des rentabilités).

La comparaison du ratio de Sharpe moyen de 34 fonds sur la période 1944-1963, et celui de l'indice Dow Jones montre que le premier est sensiblement inférieur au second. Ce résultat signifie, que la performance de l'ensemble des fonds activement gérés est moins bonne que celle du marché. Mais,

comme il est obtenu sur la moyenne des fonds, il convient de se demander si une partie des gestionnaires n'obtient pas systématiquement des résultats meilleurs que ceux de l'indice de référence, tandis qu'une autre partie d'entre eux réalise des résultats qui lui sont inférieurs. S'il en était ainsi les "bons" gestionnaires battraient plus ou moins régulièrement le marché. Ne serait-il pas, dès lors possible de les identifier grâce à leurs performances passées ?

En montrant que les classements des performances des fonds ne présentent aucune stabilité au cours du temps, autrement dit, que les performances passées n'ont aucune valeur prédictive, Sharpe a apporté une réponse négative à cette question. D'où la conclusion selon laquelle les marchés seraient efficients, c'est-à-dire que toute l'information étant reflétée par les cours, il est impossible, fût-ce pour un gestionnaire professionnel, de réaliser autrement que par hasard des performances meilleures que celles du marché.

En 1968 et 1969, peu de temps après les travaux de Sharpe, ont été publiés ceux de Jensen. Cet auteur a appliqué le modèle d'équilibre des actifs financiers (MEDAF) pour vérifier si, compte tenu du risque pris (le bêta) et de la rentabilité du marché, un fonds pouvait générer une rentabilité moyenne supérieure au taux sans risque. En étudiant un échantillon de 115 fonds sur la période 1955 à 1964 il a montré, avec l'indice S&P 500 comme représentatif du marché, que 39 fonds seulement possédaient un alpha (ou indice de Jensen) positif, un seul étant statistiquement différent de zéro, alors que 76 fonds avaient un alpha négatif dont 14 étaient significativement différents de zéro. Jensen en a conclu que dans l'ensemble les gestionnaires de fonds ne possèdent pas la capacité de choisir opportunément les actions dans lesquelles ils investissent (donc de battre le marché par sélection ou "stock picking").

Depuis que Sharpe et Jensen, les pionniers du domaine, ont publié leurs travaux, de nombreuses autres études sont venues en général confirmer et parfois infirmer leurs conclusions. Ces études ont, en particulier, étendu les mesures de performances à d'autres marchés comme le marché français, introduit des méthodologies nouvelles affinant les techniques mises en œuvre dans les années 1960 ou soulevé des problèmes qui n'avaient pas été identifiés comme tels par Sharpe ou Jensen.

Parmi ceux-ci notons celui du "biais du survivant". Dans les études précitées comme dans bien d'autres utilisant les mêmes méthodologies, des mesures sont effectuées sur un ensemble de fonds ayant existé du début à la fin d'une période donnée. Or, pendant cette période des fonds peuvent avoir cessé leur activité. Il s'agit, le plus souvent de fonds qui disparaissent parce que leurs performances étant médiocres ils n'attirent plus assez d'investisseurs. Ne pas tenir compte de ce phénomène revient à sur-estimer les performances d'un ensemble de fonds. D'où la nécessité d'ajuster les performances moyennes des fonds survivants pour tenir compte de celles des fonds disparus.

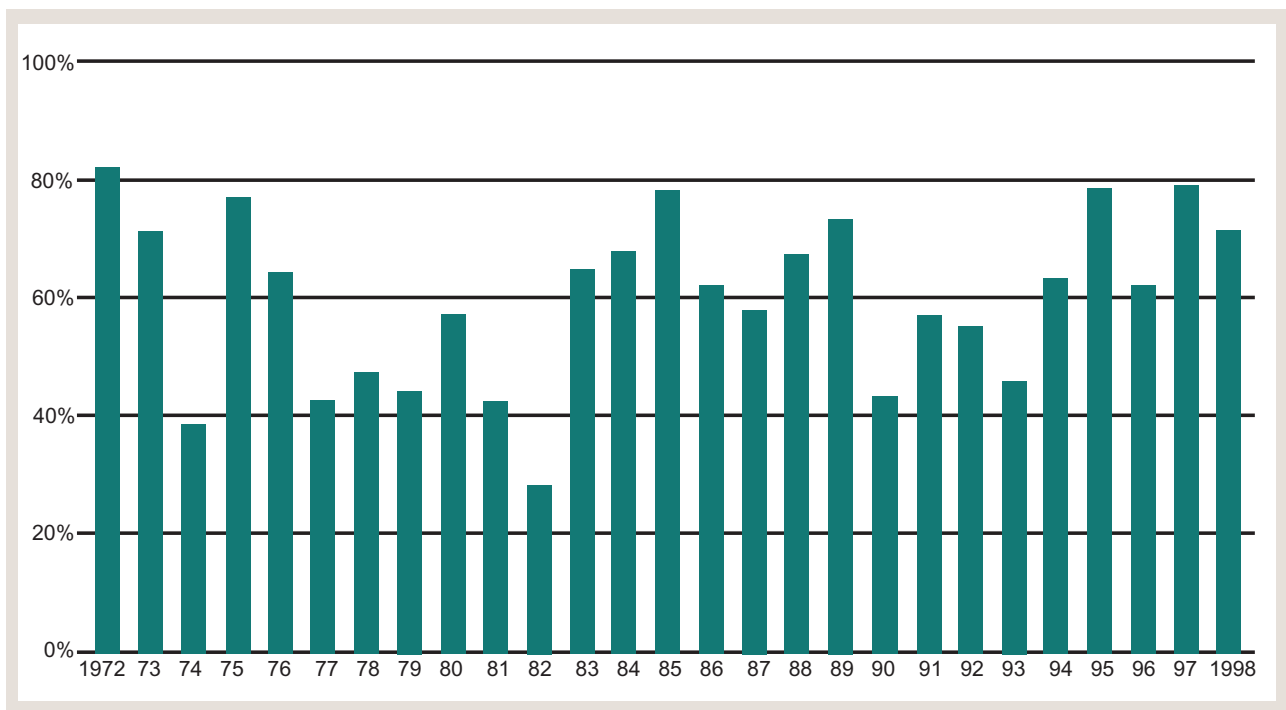
La persistance des performances a mobilisé de nombreux chercheurs. Cette question, à côté de son intérêt théorique, possède une importance pratique majeure. Toute une industrie se fonde aujourd'hui sur la publication régulière de performances. Les investisseurs se servent ensuite des palmarès affichés par des firmes spécialisées et repris par la presse financière pour allouer leurs épargne. De tels comportements sont-ils rationnels ? L'application de méthodologies plus sophistiquées que celle que Sharpe avait mise en œuvre en 1966, n'empêche pas les travaux récents de déboucher sur des conclusions quelque peu ambiguës. La plupart des chercheurs du domaine pensent qu'il est impossible de prévoir les performances des fonds. Cette opinion semble partagée par la Security and Exchange Commission (la SEC) qui, dans les documents qu'elle destine aux investisseurs, les met en garde contre la tentation d'extrapoler les performances passées. Cependant, quelques auteurs ont mis en évidence une faible persistance des performances. Celle-ci soit aurait disparu depuis le milieu des années 1980 soit serait provoquée par les mauvaises performances systématiques de certains fonds. Par conséquent, en aucun cas il ne serait possible aujourd'hui d'identifier à l'avance les fonds qui vont se montrer les plus performants.

Il est curieux de constater que malgré toutes les recherches publiées à ce jour et malgré les efforts d’“éducation” du public entrepris par une firme comme Vanguard, la gestion indicielle ne rencontre que peu de succès en France et dans l’ensemble de l’Europe. Comme, les résultats des recherches sur les performances des fonds actions ne diffèrent pas d’un bord de l’Atlantique à l’autre, tous les investisseurs devraient tirer de l’utilisation des fonds indiciels les avantages suivants :

- Payer moins de frais de gestion car à l’instar des fonds du groupe Vanguard les fonds indiciels peuvent subir des coûts de fonctionnement inférieurs à ceux des fonds gérés (aux Etats-Unis 0,3% par an pour les fonds indiciels contre 1,45% en moyenne pour les fonds activement gérés).
- Subir de moindres coûts de transaction (proches de zéro pour les fonds indiciels contre 1% en moyenne pour les fonds gérés).
- Prendre moins de risques puisque si en moyenne les rentabilités des fonds gérés sont du même ordre de grandeur que celles des indices, les rentabilités des fonds individuels sont dispersées autour de la rentabilité des indices.
- Pouvoir mettre en œuvre une stratégie de diversification précises en identifiant des fonds indiciels avec des indices sectoriels, nationaux ou autres.

Si l’adoption des fonds indiciels présente pour les investisseurs les avantages que nous venons d’énumérer elle constitue, en revanche, une menace pour les établissements collecteurs d’épargne. En effet, les frais de gestion que ces derniers font actuellement payer à leurs clients (en France, le total des frais de gestion des fonds actions est probablement supérieure à 10 milliards de francs par an) leur échapperaient en grande partie avec la généralisation des fonds indiciels. Ceci peut expliquer le peu d’empressement que montrent ces établissements pour proposer et promouvoir des fonds indiciels.

Figure 1. Pourcentage des fonds actions (de type “value” et “growth”) dont les rentabilités sont inférieures à celle de l’indice Wilshire 5000.



L'effet De La Gestion Indicielle (Du Benchmarking) Sur La Dynamique Des Cours Boursiers

Patrick Artus, Antony Orsatelli

Le développement de la gestion indicielle, pour des raisons que nous allons exposer, accroît l'ampleur et la durée des mouvements boursiers ainsi que la corrélation entre cours boursiers et taux de change.

Problématique : la gestion indicielle est potentiellement déstabilisante pour les cours boursiers

Le développement de la gestion indicielle (le "benchmarking") conduit à ce que les gérants reproduisent dans leurs portefeuilles la structure des indices. On voit bien intuitivement que ceci est potentiellement déstabilisant (**Annexe 1**) : s'il y a pour une raison accidentelle (aléa de marchés, supplément de demande...) hausse du cours d'une catégorie d'actions, et s'il n'y avait pas gestion indicielle, dans un certain nombre de cas cette hausse serait considérée comme transitoire ; le rendement anticipé de cette catégorie d'actions serait réduit (puisque le prix d'achat serait plus élevé), sa demande baisserait, et le cours corrigerait à la baisse. Avec la gestion indicielle, au contraire, le poids de cette catégorie d'actions dans l'indice montant, il y a hausse de la demande pour ces actions, donc maintien de la hausse de leur cours et baisse au contraire des cours des autres actions.

De plus, le benchmarking limite l'utilisation de l'information ou des analyses personnelles des investisseurs, puisqu'il y a mimétisme forcé ; la moindre diversité des actions considérées par les investisseurs accroît la volatilité des marchés.

Seconde problématique : la déstabilisation des changes

Restons toujours dans le cas où les investisseurs sont indicés (utilisent un benchmark) ; deux mécanismes déstabilisants peuvent être envisagés (**Annexe 2**) :

- les cours boursiers montent, disons par exemple aux Etats-Unis, les investisseurs accroissent la part des Etats-Unis dans leurs portefeuilles, d'où des entrées de capitaux et une hausse du dollar ;
- si le dollar s'apprécie, les indices étant calculés en dollars, la part des Etats-Unis s'accroît et pour les mêmes raisons l'appréciation du dollar est renforcée.

Notons enfin le mécanisme suivant : si les cours boursiers aux Etats-Unis et dans le reste du monde montent parallèlement, les poids dans le benchmark ne varient pas, la richesse s'accroît, mais ceci ne donne lieu à aucun mouvement de capitaux, donc ne doit pas avoir d'effet sur les taux de change.

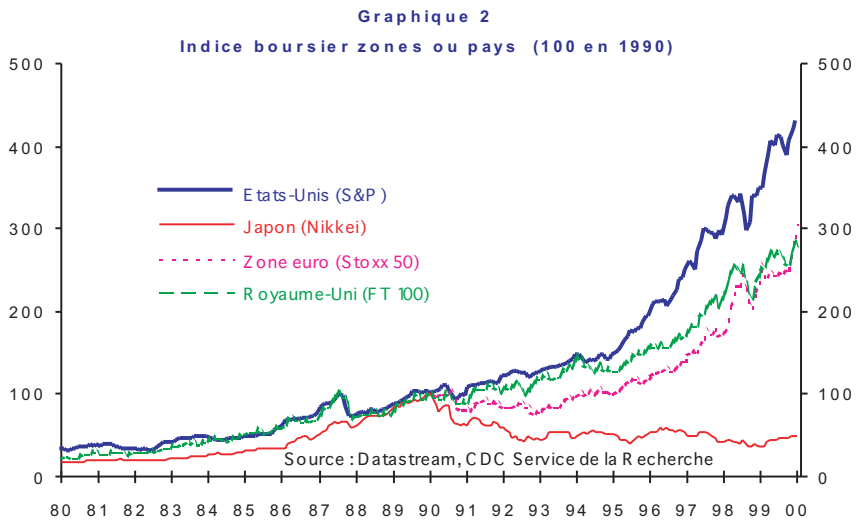
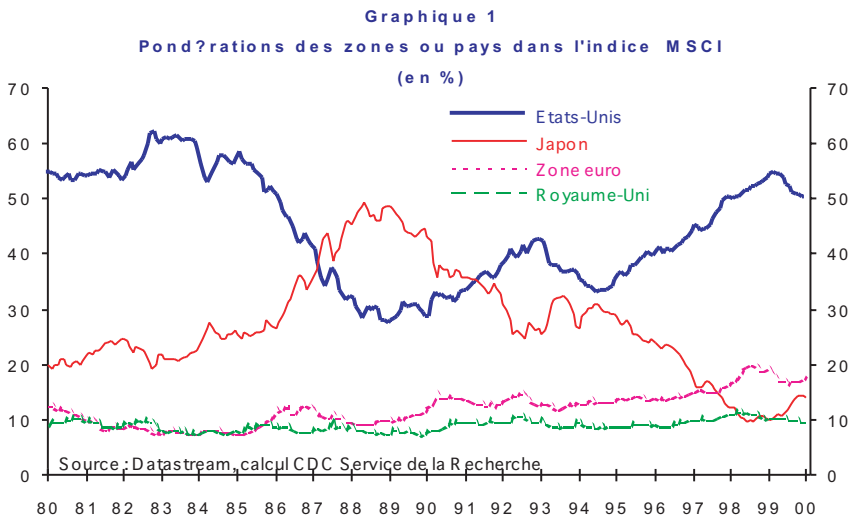
On s'attend donc au total, avec gestion indicielle (sur le marché des actions), au niveau macroéconomique :

- **à une plus forte ampleur et durée des mouvements boursiers,**
- **à une plus forte volatilité des cours,**
- **à une plus forte corrélation entre les cours boursiers et les taux de change.**

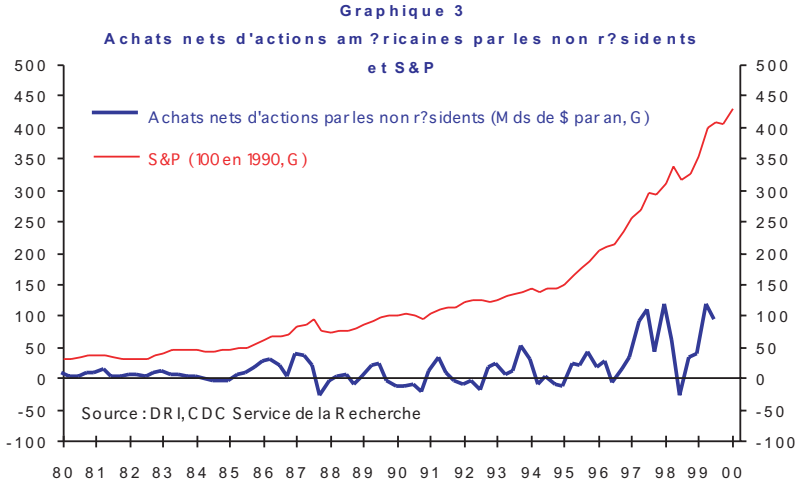
Vérification empirique des intuitions : benchmarking et cours boursiers des grandes zones

Le **graphique 1** représente les poids des pays retenus (Etats-Unis, Japon, zone euro, Etats-Unis) dans un **indice MSCI simplifié** qui ne comprend que ces quatre zones. Le **graphique 2** représente les

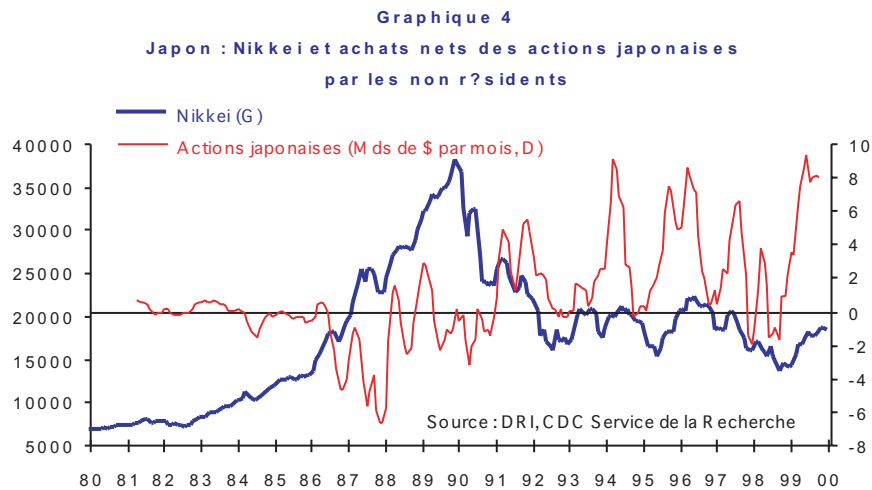
évolutions des cours dans ces quatre zones. La Bourse américaine progresse plus rapidement de 1995 à 1998, la Bourse européenne fortement en 1998 et à la fin de 1999, le Nikkei se redresse en 1999, Londres croît assez régulièrement : ces évolutions se retrouvent évidemment dans les poids des zones dans l'indice. Si on remonte plus loin dans le temps, de 1986 à 1989, le phénomène dominant est la hausse du Nikkei, de 1990 à 1992 sa baisse, tout ceci étant très lisible dans les pondérations estimées à partir de l'indice MSCI.



Le **graphique 3** permet de vérifier que, depuis le début de la période de forte hausse des cours boursiers américains (1995-96), il y a régulièrement (sauf au moment de la crise russe) des entrées de capitaux de non-résidents qui s'investissent sur le marché des actions américaines. Ceci est bien cohérent avec l'idée que la hausse du poids des Etats-Unis dans le benchmark y a attiré des capitaux.



Le **graphique 4** montre que, dans les périodes récentes de remontée du Nikkei (1995-96, surtout 1999), il y a aussi de forts investissements de non-résidents sur le marché d'actions du Japon.

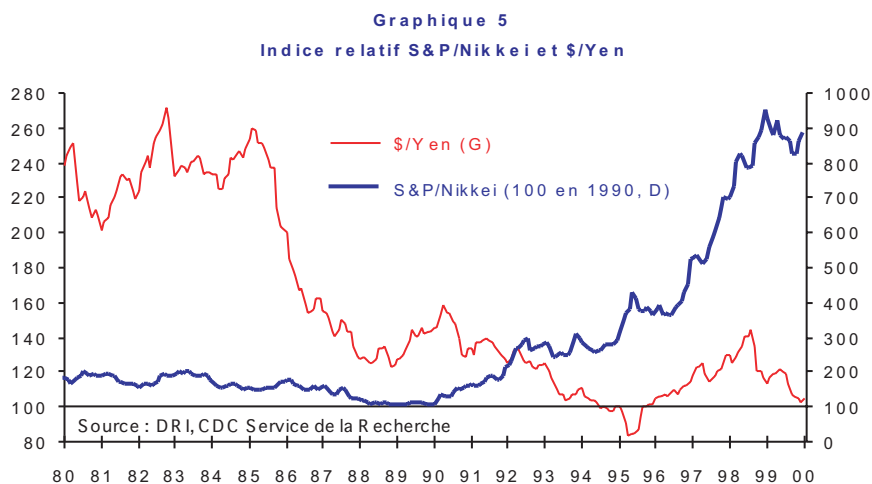


On ne peut pas bien sûr prouver que ces évolutions proviennent de la gestion indicielle, mais il est troublant de voir que les périodes récentes de forts mouvements boursiers à la hausse (95-98 aux Etats-Unis, 99 au Japon), se transmettent dans les poids des indices et induisent des entrées de capitaux de non-résidents.

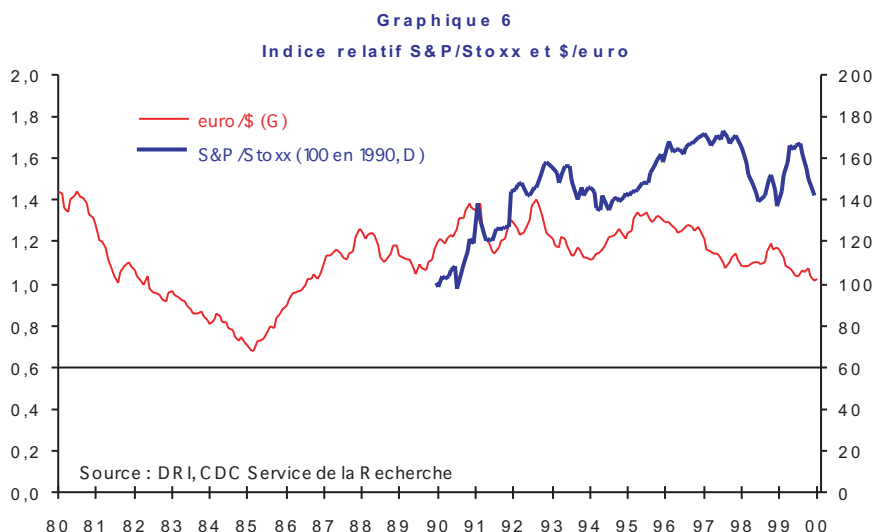
Il est donc probable que l'idée suivant laquelle une hausse (ou baisse) boursière est amplifiée par le benchmarking est correcte.

Validation empirique : indices boursiers et taux de change

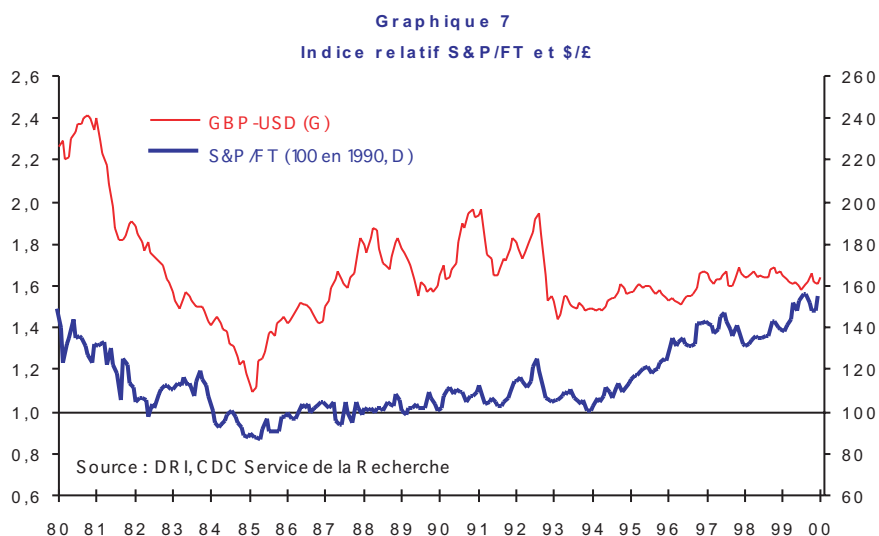
Le **graphique 5** montre la valeur relative (base 100 en 1990) du S&P et du Nikkei (rapport des indices) et le dollar-yen. On voit le parallélisme, de 1995 à 1998 de la hausse de ces deux courbes, leur baisse commune depuis la fin 98. Par contre, dans les années 80, le phénomène est beaucoup moins marqué. On note juste un certain parallélisme dans la phase de recul du dollar (86-88).



Le **graphique 6** montre les mêmes variables pour la relation Etats-Unis/zone euro. Le dollar monte par rapport à l'euro en 1993, de 1995 à 1997, en 1999 ; baisse en 1994, transitoirement en 1998. Les hausses du dollar correspondent bien à des périodes où le S&P est élevé par rapport au Stoxx, les baisses aux phases inverses.



Le **graphique 7** montre les indices relatifs S&P/FT et la parité \$/£. La Bourse américaine surperforme la Bourse britannique de 1994 à 1999 (il y a relatif parallélisme auparavant), ce qui correspond grossièrement à la période de faiblesse de la livre par rapport au dollar (1993-1999, avec une livre plus faible de 20% qu'entre 1987 et 1991).



Le tableau ci-dessous montre les corrélations entre les indices boursiers (absolus ou relatifs) et les taux de change, sur la période 95-99 en données mensuelles.

Corrélations Bourse/change (95/99)

Indices relatifs et taux de change	
S.P/Nikkei et yen/\$	0,58
S.P/Stoxx et \$/€	-0,69 ⁽¹⁾
S.P/FT et \$/£	non significatif
Indices absolus et change	
S.P et yen/\$	0,55
S.P et \$/€	-0,93 ⁽¹⁾
Nikkei et yen/\$	-0,29
FT et \$/£	0,54
Stoxx et \$/€	non significatif

(1) Signe négatif avec la cotation \$/€

Le plus souvent, on trouve bien le lien attendu : **une hausse de l'indice boursier d'un pays correspond à une appréciation de la devise du pays.**

Synthèse : le benchmarking est déstabilisant

C'est le cas, d'une part parce que les mouvements boursiers s'auto-entretiennent, d'autre part parce que les mouvements boursiers et ceux des taux de change s'auto-entretiennent.

Annexe 1

Dynamique du marché des actions avec gestion indicielle

Nous supposons pour simplifier qu'il n'y a que deux groupes d'actions (1 et 2). Les nombres d'actions offerts sont supposés constants (N^1 et N^2). Les cours déterminés à la période t sont P_t^1 et P_t^2 . L'indice (le benchmark) de la période t a donc des poids :

$$(1) \quad \frac{P_t^1 N^1}{P_t^1 N^1 + P_t^2 N^2} = \lambda_t^1$$

sur le premier groupe, $1 - \lambda_t^1$ sur le second groupe.

Les rendements des deux groupes d'actions entre t et $t+1$ sont R_{t+1}^1 et R_{t+1}^2 :

$$(2) \quad 1 + R_{t+1}^1 = \frac{P_{t+1}^1 + \Pi_{t+1}^1}{P_t^1}; 1 + R_{t+1}^2 = \frac{P_{t+1}^2 + \Pi_{t+1}^2}{P_t^2}$$

P_{t+1}^i est le cours boursier en $t+1$; Π_{t+1}^i le résultat par action en $t+1$.

La richesse des investisseurs au début de la période t est W_t défini par :

$$(3) \quad W_t = N^1 P_t^1 + N^2 P_t^2$$

S'ils ne sont pas indicés, ils partagent cette richesse entre les deux groupes d'actions en fonction des rendements attendus, ce que nous écrivons :

$$(4) \quad D_t^1 = d(R_t^1, R_t^2) W_t; D_t^2 = (1 - d) W_t$$

où d est une fonction **croissante** de R_t^1 , **décroissante** de R_t^2 , et D_t^1, D_t^2 les demandes d'actions des deux groupes ; d est donc une fonction **décroissante** de P_t^1 , **croissante** de P_t^2 .

Les prix d'équilibre en t sont déterminés par :

$$(5) \quad P_t^1 N^1 = D_t^1; P_t^2 N^2 = D_t^2$$

Si les investisseurs sont indicés, ils répartissent leur richesse en fonction des poids du benchmark, soit :

$$(6) \quad D_t^1 = \lambda_t^1 W_t; D_t^2 = (1 - \lambda_t^1) W_t$$

Supposons qu'à la période t , au moment des choix d'investissement, il y ait un aléa positif de marché qui fait monter le prix d'équilibre des actions du groupe 1. Il en résulte donc, ex-ante, une hausse de P_t^1 que nous notons ΔP^1 . Supposons aussi que cet aléa est transitoire (ne se renouvelle pas à la période $t+1$).

Sans utilisation de benchmark, la hausse initiale de P_t^1 réduit le rendement anticipé des actions de groupe 1, R_t^1 .

Il en suit donc une **correction** qui réduit l'ampleur du choc initial de prix. Avec **benchmark**, la hausse initiale de P_t^1 fait monter λ_t^1 , donc conduit les investisseurs à accroître leur demande d'actions, d'où une hausse supplémentaire du prix P_t^1 .

On peut aller plus loin dans ce cas. Si P_t^1 devient, en raison d'un aléa, $P_t^1 + \Delta P^1$, λ_t^1

devient : $\lambda_t^1 + \frac{P_t^2 N^1 N^2}{(P_t^1 N^1 + P_t^2 N^2)^2} \Delta P^1$. De ce fait la demande d'actions D_t^1 devient

$$D_t^1 + \frac{P_t^2 N^1 N^2}{(P_t^1 N^1 + P_t^2 N^2)} \Delta P^1 \quad \text{et } P_t^1 \text{ devient : } P_t^1 + \frac{P_t^2 N^2}{P_t^1 N^1 + P_t^2 N^2} \Delta P^1 + \Delta P^1 \quad \text{et } P_t^2 \text{ devient :}$$

$$P_t^2 - \frac{P_t^2 N^1}{(P_t^1 N^1 + P_t^2 N^2)} \Delta P^1 : \text{ le choc initial de prix est amplifié par la réaction des investisseurs}$$

Annexe 2

Gestion indicielle et taux de change

On suppose qu'il y a deux indices boursiers, 1 et 2, correspondant à deux pays différents : Etats-Unis et reste du monde, par exemple. A la période t , les cours boursiers en monnaie nationale sont P_t^1 et P_t^2 les nombres d'actions N_1 et N_2 (constants), les capitalisations en monnaie nationale $P_t^1 N^1$ et $P_t^2 N^2$; S_t est le taux de change (nombre de dollars par unité monétaire du reste du monde); les capitalisations **en dollars** sont donc $P_t^1 N^1$ (Etats-Unis), et $P_t^2 N^2$ (reste du monde). L'indice (le benchmark) est construit en dollars.

Les poids sont donc :

$$\lambda_t^1 = \frac{P_t^1 N^1}{P_t^1 N^1 + P_t^2 N^2 S_t} \quad (\text{Etats-Unis})$$

$$1 - \lambda_t^1 \quad (\text{reste du monde})$$

Supposons d'abord que pour une raison accidentelle **le cours boursier P_t^1 aux Etats-Unis augmente**, et devienne $P_t^1 + \Delta P^1$. Avec gestion indicielle, la partie de la richesse investie aux Etats-Unis passe de :

$$\lambda_t^1 W \quad \text{à} \quad \lambda_t^1 + \frac{P_t^2 N^1 N^2 S_t}{(P_t^1 N^1 + P_t^2 N^2 S_t)^2} \Delta P^1 W$$

et de fait **le dollar s'apprécie**.

Supposons maintenant que **le dollar s'apprécie** : S_t baisse de ΔS . De ce fait aussi λ_t^1 monte et devient :

$$\lambda_t^1 + \frac{P_t^1 + P_t^2 N^1 N^2}{(P_t^1 N^1 + P_t^2 N^2)^2} \Delta S$$

le dollar s'apprécie encore.

Le flottant réduit de certaines capitalisations boursières : Problèmes pour la gestion indicielle

Didier Davydoff

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« Initiative, Épargne et Marchés »*

Le mouvement général des producteurs d'indices boursiers vers une pondération des indices par le flottant et non plus l'ensemble de la capitalisation boursière des valeurs des échantillons des indices apparaît maintenant naturelle, à tel point que l'on peut se demander pourquoi ce mouvement ne s'est pas produit plus tôt.

Il faut comprendre ce paradoxe comme le résultat d'une histoire encore courte des indices boursiers : par rapport à l'équipondération, ou à la pondération selon la valeur des actions individuelle, l'utilisation du nombre de titres émis est apparue comme un progrès vers la construction d'indices représentant plus fidèlement le marché. L'indice pondéré par les capitalisations boursières se rapprochait du portefeuille moyen détenu par la communauté des investisseurs.

Lorsque certains objectaient que les investisseurs stratégiques ou les gouvernements constituaient une population à part, les producteurs d'indices ont longtemps répondu par les difficultés de mise en œuvre d'une pondération par le flottant. Comment connaître le flottant ? Et d'ailleurs comment le définir ? Une participation apparemment durable n'est-elle pas susceptible d'être vendue sur le marché ? Face à ces difficultés, ne risquait-on pas de susciter des contestations, notamment de sociétés importantes dont le capital était contrôlé, ou des gouvernements craignant une dévalorisation du patrimoine public ? Peut-être ces difficultés expliquent-elles encore le report à 2002 de la décision annoncée par Deutsche Borse AG de retenir le flottant comme pondération des valeurs de l'indice DAX.

Pourtant, cette position est devenue de plus en plus difficile à tenir, en raisons des problèmes qu'elle posait aux gérants de portefeuille et au marché dans son ensemble. Déjà en 1996, une étude de S. THOMAS avait montré que l'entrée ou la sortie d'une valeur de l'échantillon du CAC40 avait un effet très significatif sur les cours des valeurs concernées et que cet effet n'était totalement absorbé que 7 semaines après l'annonce des changements.

Avec l'importance croissante des indices dans le fonctionnement des marchés, de véritables distorsions risquaient d'apparaître. La gestion indicielle passive était concernée à l'occasion des modifications d'échantillons : tous les gérants devant acheter la même valeur sur le marché le même jour, l'effet temporaire sur les cours de la valeur en question se trouvait accru par la relative rareté du titre. On pourrait penser que cet inconvénient passager ne justifiait pas de bouleverser les méthodes de calcul des indices. Mais il faut avoir présent à l'esprit trois sources de difficultés supplémentaires :

- Au cours des dernières années, la demande nette de produits actions par les investisseurs a été positive et croissante. Les nouveaux flux de capitaux venant s'investir sur des produits répliquant les indices occasionnaient des achats sur le marché entretenant un mouvement de cours jugé par certains artificiel sur les valeurs ayant un flottant réduit.
- La référence aux indices est devenue inévitable pour toutes les gestions. Dès lors, il est rare qu'une gestion, même active, puisse prendre le risque de s'éloigner complètement de la composition des indices.
- Les valeurs concernées sont souvent de très grosses capitalisations. La réglementation européenne des OPCVM, limitant en général le poids relatif des titres d'un même émetteur dans l'actif des fonds et SICAV, créait une contrainte précisément sur certaines de ces valeurs à faible flottant. Cette

difficulté est devenue encore plus évidente après la crise asiatique et le « flight to quality » que cette crise a déclenché, concentrant l'attention sur les indices de Blue Chips au détriment des valeurs moyennes. Les gérants de portefeuille sont en pratique contraints à contourner une réglementation inapplicable, par exemple en achetant des produits dérivés ayant le même comportement boursiers mais réputés émis par une autre institution que celle ayant émis le sous-jacent. Le plus sage serait de modifier une règle devenue inadaptée à l'évolution des marchés. Il conviendrait de supprimer ces limites qui ne jouent plus leur rôle prudentiel, tant pour les fonds actifs que pour les fonds passifs, dont on a vu qu'aucun ne peut complètement oublier la composition des indices. Mais en l'attente d'une réforme, la pondération des valeurs par leur flottant permet dans certains cas faire passer le poids de certaines Blue Chips en dessous de seuil réglementaire des 10 % du portefeuille.

C'est évidemment dans les indices nationaux que ces Blue Chips, notamment les valeurs de Télécom encore détenues de manière significative par les Etats, dépassent souvent le seuil réglementaire des 10%. Ce sont pourtant les producteurs d'indices internationaux, et singulièrement européens qui ont initié le mouvement. Standard and Poor's avait déjà pris l'initiative en 1999 de pondérer son indice européen Euro Plus par le flottant, défini comme composé de toutes les détentions inférieures à 5% du capital d'une société. Mais cette nouvelle méthodologie n'a pas été généralisée à tous les indices de Standard and Poor's, cette innovation n'avait donc pas résolu le problème.

Le changement méthodologique annoncé par Dow Jones et par STOXX Limited aura une portée plus grande.

STOXX Limited a annoncé le 3 juillet 2000 que tous ses indices seraient pondérés par le flottant à partir du 18 septembre 2000. Le flottant est défini comme le nombre total de titres en circulation dont on déduit les « blocs de participation » (block ownership). Sont considérés comme des blocs de participation, toutes les participations supérieures à 5% détenues par l'Etat ou d'autres administrations, par d'autres sociétés dans le cadre de participations croisées, ou par des particuliers ou des familles. Les holding de conservation (custody holdings) ne sont pas considérés comme des blocs de participation.

La nouvelle méthodologie ne concerne pas seulement les modalités de calcul des indices, mais aussi la sélection des valeurs composant les échantillons. La capitalisation boursière, qui était le principal critère de sélection tant pour les indices de Blue Chips que pour les indices larges, sera remplacée par le flottant.

Certes l'impact de ce changement ne se fera pas du jour au lendemain, car les effets de « cliquet » assurent une certaine stabilité aux échantillons : la taille du flottant requise pour entrer dans un indice est plus élevée que celle en deçà de laquelle une valeur comprise dans l'indice en est retirée. Lors de la révision annuelle de ses indices de Blue Chips, effective le 18 septembre 2000, seulement trois valeurs de Dow Jones STOXX 50 et deux valeurs du Dow Jones Euro STOXX 50 ont été remplacées par des valeurs dont le flottant est plus important. Mais en cas d'événements exceptionnels intervenant dans les prochains mois, tels que des fusions faisant disparaître de la cote certaines Blue Chips, le critère pour les remplacer dans les indices sera celui du flottant et non plus celui de la capitalisation boursière. Gageons donc que si le mouvement actuel de concentration et de fusion-acquisition qui affecte les grandes sociétés européennes se poursuit, la référence au flottant entrera dans les mœurs rapidement.

Pour les gérants de portefeuille, la prise en compte du flottant dans les indices aura l'avantage de diminuer la volatilité de l'indice au moment des changements d'échantillon car les perturbations liées aux tensions sur la liquidité diminueront. Cela devrait donc faciliter l'utilisation des références aux indices, dont la robustesse se trouvera accrue : d'une part seront sélectionnées les valeurs les plus largement diffusées dans le public, d'autre part leur pondération sera diminuée à proportion des blocs de participation non disponibles sur le marché. Le déséquilibre entre offre et demande de titres sera réduit, et avec lui la volatilité. La fonction de benchmark des indices sera ainsi renforcée.

Mais la nouvelle méthodologie conduira aussi à certaines réallocations d'actif. Même si les gérants de portefeuille raisonnent de plus en plus à l'échelle européenne, il n'en demeure pas moins que l'arbitrage entre les pays garde une grande importance pour les gérants d'actifs. Au delà des sociétés individuelles, il n'est donc pas sans intérêt d'analyser l'impact du nouveau mode de calcul des indices sur le poids relatif des Bourses européennes.

DOW JONES EURO STOXX 50 (en%)			
	Avant le changement	Après le changement	Différence
France	31,5	31,2	- 0,4
Allemagne	25,2	22,5	- 2,7
Pays-Bas	16,4	18,8	+ 2,4
Italie	8,9	6,7	- 2,3
Espagne	7,6	9,6	+ 2,0
Finlande	8,9	10,0	+ 1,1
Belgique	1,3	1,2	- 0,1
TOTAL	100	100	0

DOW JONES STOXX 50			
	Avant le changement	Après le changement	Différence
Royaume-Uni	29,6	34	+ 4,4
Allemagne	15,0	11,5	- 3,5
France	14,3	12,3	- 2,2
Pays-Bas	10,9	10,7	- 0,2
Suisse	10,6	12,1	+ 1,5
Finlande	6,2	7,2	+ 1,0
Italie	5,6	3,5	- 2,1
Espagne	4,2	4,6	+ 0,4
Suède	3,7	4	+ 0,3
Total	100	100	

L'Allemagne et l'Italie sont les perdants du changement. Le projet de réforme fiscale allemande, maintenant que le blocage du Bundesrat est levé, devrait cependant déclencher le dénouement de nombreuses participations croisées, qui se fera désormais en franchise d'impôt sur les plus-values. La position boursière de l'Allemagne devrait donc se trouver améliorée par la réforme.

Ces paramètres doivent en tous cas être désormais intégrés dans la gestion de portefeuille. La référence au flottant sera sans aucun doute un facteur d'accélération du mouvement de décroisement des participations observé depuis quelques temps en Europe.

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Efficiencia Des Marches, Gestion Indicielle Et Gestion Active

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Résumé

Le concept d'efficiencia informationnelle des marchés, formalisé dans la théorie financière en 1970, est présenté comme l'ultima ratio de la gestion indicielle dans l'industrie de la gestion d'actifs. On montre que, en réalité, c'est une confusion intellectuelle sur le contenu de ce concept, liée aux hypothèses gaussiennes qu'il ne contenait pas, qui a conduit à fonder la gestion indicielle sur l'efficiencia. Libéré de cette confusion, le concept d'efficiencia implique au contraire une gestion active non indicée et un rôle important des choix de titres dans la performance finale. L'article développe et explique ce renversement récent de perspective.

Il est généralement admis dans la communauté professionnelle de la gestion d'actifs que c'est le concept d'efficiencia informationnelle des marchés, formalisé dans la théorie financière en 1970 par Eugène Fama, qui a été à l'origine du développement de la gestion indicielle passive. En réalité, un examen attentif des conditions de la formation de ce concept, et de sa compréhension par l'industrie, montre que la situation d'interaction entre la théorie et l'industrie n'est pas aussi simple qu'il n'y paraît à premier abord. On a proposé une autre version de cette apparente relation de causalité entre efficiencia et gestion indicielle, version qui situe l'origine de la gestion indicielle passive, non dans le concept d'efficiencia informationnelle des marchés, mais dans la **réduction de ce concept à une forme probabiliste particulière** : la forme gaussienne.

Cette hypothèse nouvelle a été présentée et étayée dans plusieurs travaux antérieurs, auxquels on se permettra de renvoyer le lecteur pour ne pas alourdir ni allonger le texte de cet article, et dont la référence est donnée en fin de texte. Ces travaux contiennent l'ensemble des références bibliographiques utilisées pour la validation de cette hypothèse. Le but de cet article est de présenter ces conclusions et la manière par laquelle on y parvient, ainsi que les conséquences pratiques pour l'industrie de la gestion d'actifs.

C'est en 1970 que la notion d'efficiencia informationnelle des marchés apparaît modélisée pour la première fois. Dans son désormais fameux « Efficient capital market, a review of theory and empirical work », paru dans le Journal of Finance, Eugène Fama définit l'efficiencia informationnelle comme une propriété des marchés selon laquelle toute l'information disponible et pertinente existant sur le marché est utilisée par les agents et passe dans la détermination du prix coté. C'est l'opérateur mathématique « espérance conditionnelle » qui est introduit pour formaliser cette faculté que les agents ont d'utiliser toute l'information dont ils disposent, et dès lors, l'efficiencia informationnelle des marchés devient mathématiquement associée à l'espérance conditionnelle par rapport à un ensemble d'information.

Bien avant Fama, cette idée d'efficiencia traversait la littérature universitaire en finance et en économie, et était présente à l'état embryonnaire dans de nombreuses études antérieures. Par exemple, en remontant le temps, les travaux de Roberts (1959), de Working (1956), de Hayek (1945), de Cowles (1933), et de Taussig (1921), véhiculent une telle intuition. On peut aussi la trouver dans la thèse de Bachelier (1900), et même chez un économiste français du XIXème siècle, Jules Regnault (1863). Cependant, l'expression de l'efficiencia informationnelle par l'espérance conditionnelle n'apparaît qu'avec Fama. Le versant éthique de l'hypothèse d'efficiencia concerne la notion de « juste » répartition des richesses, posée à travers la question : les marchés sont-ils de bons répartiteurs de richesse, ou, en

d'autres termes, l'outil allocatif qu'est le marché, est-il **efficace** dans l'ordre de l'information ? On voit que l'efficacité informationnelle est un concept polymorphe.

Pour l'industrie de la gestion d'actifs, la conséquence pratique de cette notion d'efficacité informationnelle est posée par Fama dans des termes clairs : si un marché est informationnellement efficace alors aucune politique de gestion active d'un portefeuille ne parviendra à obtenir une performance supérieure à la performance du marché lui-même. Autrement dit, quelle que soit l'habileté des gérants de portefeuilles, quelle que soit la capacité des analystes financiers à élaborer des prévisions de cours boursiers, et des économistes à déterminer une conjoncture sur la conjoncture, l'efficacité des marchés implique que la performance d'un portefeuille géré activement en utilisant ces prévisions ne sera pas meilleure que celle d'un indice représentatif du marché. Une version plus faible est donnée par Jensen (1978) : même s'il existe des poches de prévisibilité possible sur les marchés, des politiques de gestion active ne pourront cependant pas permettre de dégager de performance supérieure à celle du marché, en raison du frottement induit par les coûts de transaction. Aussi, en conséquence, la meilleure attitude à adopter pour utiliser au mieux les ressources financières disponibles (fonds propres), est de se séparer des gérants de portefeuille et des analystes financiers, et de chercher à reproduire mécaniquement le comportement d'un indice de marché : de remplacer les hommes par des machines.

Sous cette forme, l'hypothèse d'efficacité est donc directement associée à une non utilité sociale de la gestion active. Il est considéré en général que ce sont les tests effectués par Treynor, Sharpe et Jensen entre 1965 et 1968 qui ont solidifié cette idée. On sait moins que c'est Cowles (en 1933 et 1937) qui lança les prémisses d'une telle conception¹³, conception qui conduisit Samuelson (1975) à lancer sa célèbre boutade selon laquelle, pour l'utilisation la meilleure des ressources humaines pour le PNB, les gérants de portefeuille feraient mieux de se recycler dans des activités productives. Cette conception de l'efficacité va être à l'origine de l'industrie de la mesure de performance des portefeuilles, dont l'objectif sera de tester statistiquement l'hypothèse de l'inefficacité des gérants actifs par rapport à la gestion indiciaire passive.

Cette étrange conception a été formalisée par Fama de la manière suivante : l'écart entre l'espérance mathématique conditionnelle de la performance du portefeuille indiciaire et la performance réelle d'un portefeuille géré activement est modélisable par un bruit blanc d'espérance nulle. La convergence des rentabilités réelles du portefeuille géré vers l'espérance de rentabilité du portefeuille non géré assure aux investisseurs que la présence d'un écart systématiquement positif est anormale, de la même manière qu'un écart négatif finira tôt ou tard par se résorber. Si l'on comprend cet écart comme une mesure de risque, alors, comme le dit l'adage boursier, la patience réduit le risque. Ce précepte n'est rien d'autre que l'application du théorème de la limite centrée sur la surperformance des portefeuilles gérés activement. Pour un certain nombre de raisons, qui tiennent à la fois de considérations calculatoires, théoriques, sociologiques, et intellectuelles, c'est la loi de Gauss qui fut utilisée comme première loi calibrant les variations de cet écart entre la performance de l'indice et la performance des portefeuilles gérés. Avec cette loi, les écarts entre l'indice et le portefeuille réel sont supposés se résorber rapidement, et n'être jamais très importants. Dans cette perspective, on conçoit que la meilleure attitude à adopter soit la gestion mécanisée ou semi-mécanisée. Dans ce dernier cas, sans aller jusqu'à reproduire passivement un indice de marché, on concevra un processus d'investissement dans lequel la contribution la plus importante à la performance finale proviendra de la performance de l'indice de référence. C'est la démarche dite « top down » des sociétés de gestion, et le fameux « triangle des consultants » selon lequel 70% de la performance totale provient de l'indice de référence (ou allocation stratégique), 20% de la performance provient des allocations tactiques, et seulement 10% proviennent des choix de titres.

Las, ce qui est apparu de plus en plus clairement depuis une dizaine d'années, c'est la concentration de

¹³ Voir Walter [1999a] pour la mise en évidence chez Cowles de ces prémisses.

la performance sur un très petit nombre de jours ou un très petit nombre de titres. En retirant 10% des titres d'un portefeuille sur une période de détention donnée, on peut perdre jusqu'à 90% de la performance totale du portefeuille : le triangle des consultants s'inverse et devient une pyramide qui repose sur sa pointe. La raison profonde de ce phénomène est la violation de la normalité par les rentabilités boursières empiriques, et l'existence de queues de distribution fortement non gaussiennes. La recherche financière a depuis longtemps abordé cette question, que ce soit avec les distributions α stables de Lévy, les dépendances sur les variances (modèles de la famille ARCH), ou la théorie des valeurs extrêmes. Avec des queues de distributions plus épaisses que prévues par la gaussienne, quelques titres peuvent suffire à faire toute la différence entre deux portefeuilles, car le risque **spécifique** ne décroît pas comme le prévoit la gaussienne¹⁴. Mais la prise de conscience des conséquences de la non normalité sur les gestions de portefeuille n'a pas été immédiate, et est apparue indirectement avec l'émergence d'un courant de gestion hétérodoxe par rapport au dogme de la gestion indicée, appelé, précisément « alternative management », ou gestion non indicée, qui est en quelque sorte une réponse sociologique de l'industrie au problème de la non normalité.

Qu'en est-il alors de l'efficience ? On voit que, du point de vue de la transmission de l'information dans les prix, la différence de modélisation porte sur la nature des aléas (au sens probabiliste) qui agitent les écarts entre espérance de rentabilité et rentabilité réelle. Ce qui est modifiée avec des distributions non gaussiennes, ce n'est pas la propriété économique d'efficience, mais sa forme probabiliste réduite gaussienne. Comme le concept d'efficience est né d'origines probabilistes avant d'être économiques¹⁵, la changement de loi de probabilité n'a pas d'impact sur le concept d'efficience lui-même. Dit autrement, cela signifie que, dans des marchés efficaces mais non gaussiens, la meilleure attitude consiste, non à reproduire un indice de référence, mais à choisir les bons titres.

Références des travaux dans lesquels est développée l'argumentation présentée ici

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¹⁵ Voir Walter [1996] pour la justification précise de cette proposition.

June 2001

Published by

European Asset Management Association

28 Austin Friars

London EC2N 2QQ

United Kingdom

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Printed by Heronsgate Ltd