

Position Paper
April 2008

The lessons of Japan's lost decade

Debt has unique power in story-telling approaches to investment to feed extreme fear of payday, particularly when it looks too late to prevent it. A popular theme today is that the scale of the credit crisis and its resistance to normal corrective mechanisms means we should dust off our history books and study the Depression economy of the 1930s. The other story in this vein is actually within the living memory of most investors: Japan's 'lost decade' of the 1990s.

In this paper, we argue that the significance of the Japan story for other markets today is not so much the contextual similarities as the fact that long periods of negative real returns occur rarely yet often enough in global stock market histories to be part of any realistic model of possible outcomes from equity investing, whatever the market. It is therefore a story that should have already informed any financial planning where the consequences of different investment outcomes are a key element of the assessment of clients' true risk preferences. That means pretty much all investment undertaken by individuals as well as institutional investors.

The other significance of Japan's dire experience is that, on the basis of the same probabilistic model of longer-term investment outcomes, it is the best bet amongst the major equity markets today and should have a significant weight in diversified portfolios.

To make these points, we refer to our own formal modelling approach to equity markets, which does not require analysis of underlying accounting measures, such as those used in price earnings multiples or price to book value ratios. However, even by those conventional measures we can see that investor expectations have rarely been lower in Japan in the past 50 years and even look low by current European and US standards. Buying markets where expectations are low is not a guarantee of superior returns in the future but it helps.

This attractive relative value coincides with evidence that might persuade even the most agnostic of currency forecasters that the yen is undervalued against sterling.

Summary

Japan's economic malaise of the 1990s was experienced in the stock market as an exceptionally long period (actually more than a decade) of falling and then flat real returns earned. The full extent of the decline from peak to trough in the ratio of actual returns to the long-term trend was as great as the UK's bear market in 1973/4 but it took 14 years, not two. Other examples in the last century, including the US Depression period and the 'Eurosclerosis' malaise of the 1980s, lasted between 4 and 7 years.

Both the full extent of Japan's underperformance of expected returns since the bubble peak of 1989 and the duration of its underperformance matter. But it is the duration that singles it out as exceptional.

Underperforming the trend means that a market failed to deliver anything like the rationally-expected reward for risk taking. The longer this failure persists, the more investors give up on the assumed equity risk premium, question the entire equity return-generating process and turn to different assets.

Our performance measure is continuously-compounded, inflation-adjusted, total returns (with income reinvested) in logarithmic terms. This measure properly reflects the actual ability of equities in a period to protect against inflation and hold real value in a deflation. It does so without distortion by the case-specific effects of drawing down from capital (which includes consuming income). Working in logs keeps everything proportional, which helps when we illustrate the past graphically.

Our argument about the lesson of this is simple. The possibility of markets reaching absurdly high levels relative to a sustainable and globally-similar trend should be ever-present in investors' expectations. Indeed, it is a key part of the possible payoffs that make risk-taking interesting. But it is interesting only if the opportunity to sell is grasped, otherwise what is given will be taken away again. The full extent and duration of the decline when it is taken away also therefore needs to be ever-present in investors' minds, otherwise they will fail to profit from the good payoffs and will be shocked (or worse) by the bad payoffs.

Portfolio management is most commonly undertaken as a race with other people's money. The race can only be won if the client's agent backs a view of what will happen. The win is experienced by the agent as growth in assets and fees subsequently. Wealth management is different. It is a journey not a race, with the driver in the same boat (car, whatever) as his or her client. In the journey, success is measured by surviving dangers and achieving realistic objectives formed in terms of consequences for the passenger. This description of 'utility' holds for most private investors whether risk tolerance is set high or low, set by the personality of the investor or by discreet goals for their money.

In this wealth management context, the significance of Japan's malaise is that such an outcome needs to be within the bounds of all probable outcomes for any one market, even if it has a very low chance of occurring.

It is interesting to speculate (as we do in our blog) in what context such an extreme outcome might arise in (say) the US or UK today. But that speculation should be independent of the assessment of probabilities. Equally, therefore, we caution against working the other way round: from a view of the context (eg a vicious cycle emanating from a US house-price crash) to a view of the most likely stock

market outcome. The latter approach asks too much of even the best forecaster and belongs in the portfolio race not the wealth management journey.

Our measurements of probable future returns are dependent on current market conditions. The mid-point of our projected ranges of uncertain outcomes is anchored on the observed current deviation from the historical trend. How wide the band is around the mid-point depends on the observed standard error of the historical regressions, the amount of historical data we have to work with (50 years for Japan is quite short) and (for foreign markets) the addition of currency risk (where the impact on real outcomes is a function of deviations from the 'real exchange rate', being that explained by inflation differences between any two countries).

What our measurements show today is that Japan is still exceptional as being the only market well below its long-term trend (and that after the trend itself has been lowered by 14 years of low returns).

Other markets are quite close to trend, which does at least mean that the downside risk is less over longer periods than it would be if they were starting out significantly overvalued. They have been quite close to trend since the bottom of the bear market in 2003 because the previous correction did not 'overshoot' – probably because of the reflationary measures taken after 9/11.

How much an investor should hold in Japan to benefit from the margin of relative safety implied by such a low current valuation depends on the particular approach to diversification. In our portfolio construction process, the band of probable outcomes for a geographically-diversified spread of equity markets allows for the possibility that there will be a high degree of convergence in the return paths – in other words that a Japan-style prolonged bear market can occur globally. But there is still a significant benefit from diversification.

In the absence of any preferred bias to the UK as 'home' market, and with long investment time horizons, our process leads to an optimal position of about 30% of a client's total equity exposure in Japan. With a home bias it falls to about 22%. These positions reflect quite large bets on the information in our measurements of relative value. If we discount the information value, and assume return *differences* are less widely distributed, the allocation will be about 18% with a home bias and 25% without.

In all cases, these are proportions of the *equity* component of the portfolio. When we come to customise the portfolio to individual risk tolerance, we 'dilute' the equity exposure by holding more of a *risk free asset*. For most goals, this is index linked gilts, because they provide almost complete certainty of real outcome and can even be matched to a specific time horizon (or to the duration of a series of horizons each with targeted cash flows, such as drawdown). Index linked gilts are the individual's natural 'safe harbour' from which the merit of setting out in search of riskier real wealth outcomes must always be judged. Japan included.

The portfolio construction process generating these allocations is described on our website. The type of portfolio is called "Defined Outcome" because the return-generating process, being based on a narrow set of historically-evidenced assets, allows us to quantify future outcomes.

It contrasts with a "Defined Path" portfolio which uses a much richer mix of assets, both traditional and alternative, to build portfolios with less predictable real outcomes but smoother return paths. The difference between the two is explained in a paper accessible on our blog (search term: 'absolute-return investing' – or archive for 12th December 2008).

1. Lessons for global economies and markets

How the story goes

Japan's 'lost decade' in the story refers to the 1990s when Japan's phenomenal post-war economic boom came to a sudden end with the collapse of both share prices and land prices. For most observers, there was a strong element of 'the emperor's new clothes' as fear of Japan's world-beating perpetual-motion machine of high personal savings funnelled into high corporate investment turned almost overnight into derision at its inflexible institutional structures, wasteful capital allocation and poor governance.

A particular casualty of the collapse in share and land prices was the solvency of the Japanese banks, although part of the problem was that many of them also had weak procedures for governance and for allocating capital.

The effects of the bust were felt as a combination of weak asset prices, no more 'jobs for life', little growth in consumer incomes and high precautionary savings. But capital formation did not fall and many Japanese companies continued to be highly effective world players.

Japan's post-war role, as the emerging creditor nation for maturing economies with a much lower savings propensity, continued unabated. Now that it is the Anglo-Saxon model of low savings and high borrowing that is seen to be the naked emperor, this dependency on Japan's financial strength is being viewed rather differently.

An element of the Japanese story thought to be relevant to other economies now is the fact that conventional monetary and fiscal policy responses did not work, hence perpetuating the weak growth rates in the overall economy and the consumer sector in particular. A mildly deflationary tendency has a lot to do with this. Even extremely low nominal interest rates were quite high in real terms – a feature the 'lost decade' shares with the American Depression of the '30s.

For equity investors in Japan, the period has been immensely testing. Indifference is the tempting response. It has actually come naturally to the majority of Japanese, who have not invested widely in stocks except for bouts of short-term speculation. Indifference was quite appealing to foreign investors too, who had already been dogged by Japan in the late 1980s when they were reluctant to participate because of high valuations. This writer has been a global investor since the mid-1970s and there was probably only about one decade, at the start, when Japan was not the tricky item on the agenda of strategy meetings, before the event, and even trickier in client meetings explaining, after the event, why the strategy was not working out. In a modern fund management industry it is negligent to ignore the world's second largest stock market but it has repeatedly punished bulls and bears alike.

In terms of both the lack of economic growth and the direction of the stock market, the lost decade really refers to the period 1990 to 2002. Since 2002 Japan has enjoyed steady quarterly growth in GDP and its stock market has performed quite well relative to others since the global bear market low in 2003.

Real total return: the 'bottom line'

Knowing the theoretical weaknesses and practical pitfalls of basing investment strategy on conventional forecasting of fundamental factors, and on the resulting valuation measures, we prefer a different approach. It is interesting to see what that tells us about Japan's lost decade.

The 'bottom line' of equity investing for long periods is the *real total return* achieved. 'Real' returns measure the job done in terms of protecting against inflation and creating value even in deflation. 'Total' return ignores the artificial separation between capital that stays invested and income that is consumed, treating all dividends as if reinvested as received. As the true measure of wealth creation from investing, real total return is also by definition a 'common language' between countries, allowing comparison without the distortion of differences in inflation, accounting or taxation.

When we examine the historical paths of real total returns for market indices, expressed as continuously compounded logarithmic returns, we find that regression trends and standard errors are surprisingly similar, as though not only the language but also the underlying explanatory return process is the same. By regression trend we mean the growth rate that best fits all the observations (as opposed to just the first and the last) and the standard error measures how dispersed the individual observations are and how good the fit.

For the real returns to be so similar at different stages of economic development or between countries with different economic growth rates implies some form of cross-border 'equilibrium' model of corporate performance (at the level of per-share measurements of company return) and required shareholder returns. An equilibrium model is one where movement away from some central tendency is self-correcting for good reason and is not just statistical noise. An example relevant to stock-market returns is the competition between labour and capital. Higher wages imply labour is winning but if they lead to lower profits and thence to job cuts capital will get back the upper hand. There are many versions of equilibrium theories to explain why good companies eventually end up looking like average companies. There are also many equilibrium explanations of why high growth at the level of revenues cannot be pulled through to the level of earnings per share on which share-price valuations depend.

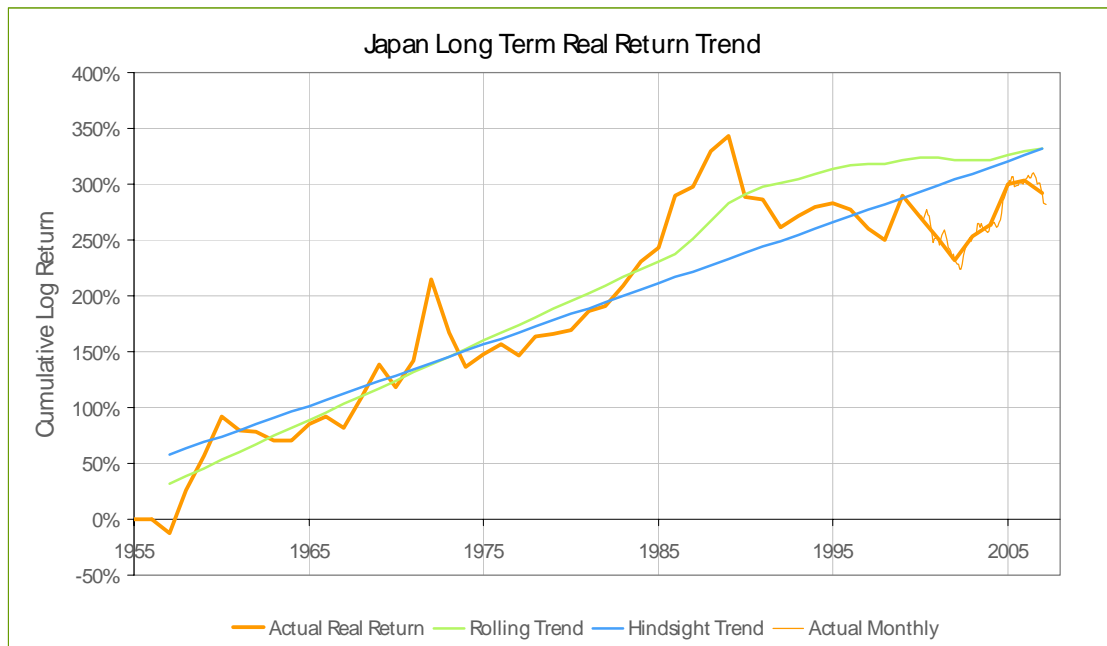
What is more surprising than the similarity in achieved return trends is that the deviations from trend also appear to be very similar, when allowance is made for differences in the amount of data available. Such similarity implies a single, global return-generating process whose theoretical explanation does not require insights into economic growth and risk differences.

Japan's return history

The dataset which our return-generating model of individual equity market real returns uses includes a Japanese time series from 1957. It is based on the Nikkei average to 1969 and the MSCI capitalisation-weighted average since then, in each case deflated by Japan's Consumer Price Index. We ignored earlier post-war data as being distorted by exceptionally strong growth.¹

The resulting indexed performance is shown below. The green line shows the fitted trend using data up to that point (hindsight-free) and the blue line shows the trend for the whole period, as observed today, which would not have been known at earlier dates.

¹ This could be avoided by including pre-war returns but the recapitalisation after the war of much of Japan's equity base means that both sets of returns could probably not have been achieved by the same shareholders.



The whole-history trend is 5.5% pa, down from 7% before the bear market of the 1990s. The comparable regression trends, and the period of observation are shown below. Note that both the

	First data observation	Trend % pa
UK	1900	6.2
Europe ex-UK	1970	7.1
USA	1926	6.9
Japan	1957	5.5

trend and deviations (or statistical errors) are sensitive to the length of data history, a factor that needs to be taken into account in the confidence of any future return forecasts derived from these time series.

What marks Japan out in this period is not the extreme ratio relative to the trend (equivalent loosely to a measure of 'relative value') of about twice 'normal' in 1989. Ratios of twice normal were achieved in several markets in the early 1970s and again in the 'dot com' boom in the USA.

Neither is it the bear market decline to a ratio of 60% of normal by the time the market levelled out in 1992. The 1973/4 bear market knocked many markets lower than this, including the UK with a ratio at the end of 1974 of just 36% of the hindsight-free trend.

What really makes Japan stand out is its subsequent reluctance either to extend relative value to perceived 'bargain' levels or to revert to anywhere close to its previous mean. It is this debilitating drift, punctuated by false rallies and renewed capitulation, which makes Japan such a potent story for investors in equities. Taken as a whole, the ratio bottomed out in April 2003, almost exactly equal to the two-year bear market in real terms in the UK in 1973/4 but it took Japan 14 years to do it.

Duration matters

Long periods of frustrated risk taking sap investors' appetite for risk and undermine their confidence in the return-generating process that delivers risk premiums.

Most investors have specific time horizons that shorten as a function of age and so the ability to bear the same *level* of risk is not constant even if they did not alter their inherent risk aversion. 'New investors' (such as new workers or employees of defined benefit pension schemes accruing new years of service) tend not to outweigh the eroding confidence of the owners of the stock of existing assets. Theoretical arbitrage between countries may also fail to work if the perceived risks of being long a poorly-performing foreign market outweigh the expected payoff from a recovery that may be just as slow as the wealth-destruction phase itself was.

Exceptionally long bear markets are likely both to reflect and engender loss of confidence in the institutional structures, corporate management structures and political process. These are all part of the current *Heisei* era malaise.

In this respect Japan shares much with the persistent disappointment of Continental Europe in the 1980s, a period that gave rise to the phrase 'Eurosclerosis'. The malaise in Europe's case also touched political institutions as well as corporate structures and featured problems whose roots lay in the previous exceptional performance of the post-war recovery, much like Japan's. It is often overlooked that the European stock markets, which fell as much as many others in the 1973/4 bear market (though less than the UK) failed to join in the recovery in equity real returns for another five years, making a total of seven lean years – though still less than Japan.

Much as happened in Japan, a European economy and market 'going nowhere' generated a self-perpetuating indifference in the point of equity investing. Many investors therefore missed out on Europe's powerful stock-market recovery between 1982 and 1987.

Compared with both these examples, the Depression in the USA was a story of extreme sensitivity to stock price falls (because they were the collateral for the excess bank borrowings) but in real terms the worst was over for stock markets in about three years – much more akin to the UK experience in 1973/4. Considering the superficial similarity with Japan's deflation, the difference in the purchasing power of equities is quite striking. US equity returns in real terms were quite buoyant between 1932 and 1936.

Japan also performed badly in the Depression years although the reasons are more domestic, reflecting a sequence of stockmarket bubble (bursting in 1920), earthquake (1923) and bank runs (1927). Some of the policy responses and their ineffectiveness nonetheless have eerie similarities to its more recent malaise.

In terms of duration, Japan therefore appears unique in the last century. In the 19th century, on the other hand, prolonged slumps were more frequent and tended to be global in nature. But these had their origin in (and owe their durations to) silver or gold standards. Japan, ironically, was a notable exception, escaping these episodes by opting for floating exchange rates for almost all the period since it joined the modern world after the *Meiji* 'revolution' in 1886.

Property and the debt element of the story

What Japan and the US are also thought to have in common is a possible prolonged decline in property prices, on the basis that land and buildings (but not agricultural land, unlike the farming

depression of the 1930s) are the main form of bank collateral that is falling in price. This is oversimplistic.

Stock and land prices have a long history of co-movement in Japan, for at least the whole of the post-war period. It makes some sense in a country which supports about 30 times the population per habitable area as the USA. Even with impressive productivity improvement, extraordinarily rapid growth in industrial output and personal incomes has always stretched Japan's physical construction capacity.

It is commonly thought that the reason Japan's economic recovery was so slow coming is that banks were not encouraged to write down their property loans realistically fast. This is at odds with the profile of the decline in Japanese property values which was in fact quite shallow: no single year showing a percentage drop in double digits. Consistent with the past, recoveries in land and stock prices have again gone hand in hand since 2003.

The main reason for fearing a deep and prolonged recession in the USA is low personal savings and weak household balance sheets. In fact, during much of the unsustainable deterioration in American balance sheets, Japanese household savings have effectively been recycled, through many financial intermediaries, to support excessive spending and borrowing, particularly home loans, by American consumers.

We do not know what to expect as a recession profile in America simply because the financial imbalances have usually been in the corporate sector rather than households. We know a lot about how companies rebuild liquidity and cut costs and investment spending in a business downturn but we do not know how households will do it except that they cannot do it as quickly. Japan's example is not directly relevant because it started with strong personal balance sheets but it is relevant in demonstrating how anaemic personal incomes and low consumer confidence can prolong a weak economy.

Assessing the likely duration of the US economic cycle is inextricably linked with the housing bubble and would be easier if there had been precedents of equivalent speculative bubbles since the war. In a country where land is so readily available to support growth as needed, and so with no history of long-term real growth in land prices, it takes a very intense popular delusion to lead to a doubling of prices in real terms in about five years. It also takes delusion on the part of lenders whose collateral has never in the past been unrealistically bloated in this way. The unfamiliarity of the situation makes predictions difficult but also carries the clear risk of prolonged disillusionment on the part of both borrowers and lenders.

Even if prices fall substantially, we do not know what the knock-on effects will be on consumer confidence or employment and whether they are made more vicious by the scale of losses incurred by banks on their property collateral. We also do not know what the feedback effects of the loss of banking capital and lending capability will be on the private sector, both households and businesses. Both need access to credit during the period of balance sheet rebuilding and often the first effects of recession are to increase credit needs, to bridge income interruptions and finance rising inventories.

So whilst the similarities with Japan are not that close they are close enough to suggest the Japan comparison will continue to be made, and made in the context of likely duration as well as degree.

2. Lessons for wealth management

Being realistic about equity risks

How close the parallels are between Japan in the '90s and the US or other countries now does not really matter if you believe, as we do, that it is pointless to try to select precise lessons from history based on contextual similarities, such as property prices or over-borrowing: it assumes too much ability both to define the context correctly and to predict the stock-market implications.

Instead we think the real significance of Japan's equity market experience in the 1990s is that it tells us what can happen in any equity market: not just an intense period of weakness (which recurs frequently in markets) but also prolonged periods of sideways drift, and hence gradually increasing value relative to the sustainable long-term trend. Both therefore need to be part of the expected possible paths and outcomes from equity investing.

No investment in the good times should have been blind to this possibility: it was always what was risked (and indeed a source of the expected risk premium).

Considering the way equity risk is typically presented to private investors in product literature and even some investment books, we wonder whether the writers are on another planet. Rules of thumb such as investing for a 'long term' of five years, or that equity risk declines the longer you hold them, are clearly not informed by an understanding of how slow the mean-reverting feature of returns can be and how random returns are. Even over five years you might as well toss a coin. Unable to calculate probabilities, they fall back on popular heuristics.

A complete set of probabilities also needs to allow for the correlations between markets. The probability of all markets doing what Japan did at the same time is significantly less than a single instance. We know that the actual correlations, measuring the degree of co-movement, between pairs of different markets are highly unstable and period-specific. Nonetheless, geographical diversification remains a good first line of defence against extreme outcomes.

In our own model, the best- and worst-case paths for a diversified portfolio are likely to be those in which extreme return deviations from trend are associated with convergence of correlations. In each case, changing correlations magnify the range of probable outcomes at the portfolio level.

Fitting the portfolio risks to a personal plan

Knowing what can happen rather than what will happen is still very powerful when applied to individual circumstances. Quantifying the possible paths and outcomes allows an investor to consider the *consequences* of these in terms of the attributes of their financial life that they most value.

Investors' own time horizons are clearly important to the calculation of the probabilities and to the consequences. Being able to quantify horizon-specific real outcomes is likely to lead investors to tighten up their exposure to risks as their horizon shortens, even though their risk preferences are not otherwise changing. In addition, the consequences of bad outcomes are likely to be specific to the goal assigned to that money.

If the risk of a Japanese-style 'lost decade' of real investment returns means that retirement income is reduced intolerably, exposure to equities has to be diluted until the consequences are bearable. If the impact is that income before retirement, or even the ability to work to the preferred retirement age, are at risk in such an economic malaise, the level of acceptable investment risk may need to be tightened even further.

A young investor accumulating assets can counter-intuitively welcome long periods of low valuation in equity markets as it means that each investment has a higher range of probable outcomes attached to it when that capital is eventually used. This assumes the investor keeps faith with the slow mean reversion to some equilibrium trend. If the investment approach is built around a formal, rational model, with constant reprojection of real outcomes, keeping faith is more likely.

By contrast, clients drawing down from capital, such as those in retirement, are damaged by bear markets. They are also far more damaged by a Japan-style bear market than by a brief but severe bear market such as experienced by the UK in 1973/4. Even if they believe in the eventual mean reversion, if it comes when they have already steadily depleted their capital at a rate that assumed a 'normal' recovery, it may be too late to avoid running out. In drawdown, this is the worst-case scenario.

3. Japan as an investment opportunity

The lesson of the '90s for Japan in the future

One of the most important reasons for understanding whether what happened in Japan is really consistent with a sustainable, global, equity return model is that it tells us what to think about future returns from investing in Japan. There are two dimensions to this:

- The reasons for including Japan as a core component of a diversified portfolio
- The appropriate exposure to Japan, to reflect its long-term real return potential relative to other markets.

The diversification context

Any portfolio approach that uses diversification, or a mix of risk exposures, to improve the expected risk-adjusted return of the equity portion of a portfolio should start with the presumption that it will gain in 'efficiency' from including Japan. The gain in portfolio efficiency can be thought of as a higher expected return per unit of risk or a lower level of risk for a particular level of expected return. This holds true whether other risky assets are combined with equities or not.

These general observations tend to override particular assumptions about the expected return, the uncertainty associated with that return assumption and the expected correlation with other assets in the portfolio opportunity set. When they do not, it is likely to mean those estimates are wrong!

Even if the return assumption is 'knowing' and predicated on a continuation of its economic malaise, leading yet again to lower expectations than other markets, the diversification effect should logically

hold, as the implied correlation with other markets is also then very low. A feature of the malaise in stock market terms is that Japan for most of the period did not behave like other markets, even to the point that for some of the period it has been negatively correlated.

The portfolio problem addressed by diversification is often solved using short-period returns (say three years) and monthly standard deviations (or volatility of nominal returns) as if relating to a 'decision time frame' rather than an 'outcome time frame'. Optimising allocations on a decision time frame is part of the race approach, suiting agents more than their clients. However, clients who believe there is useful information about their selection of the agent contained in short-term performance may think that breaking the journey down into a series of legs of a race suits them too.

If expected returns, standard deviations and cross correlations used in the portfolio-building process are instead based on real outcomes at planning horizons relevant to the client's goals, the benefits of diversification could be either greater or lesser depending on the correlation assumption. Logically, outcome correlations will be *closer*, notwithstanding the small chance of a single market like Japan behaving differently for a very long time. The long-term payoffs from a mix of developed equity markets are likely to be very good or very bad because most of the individual market payoffs were very good or very bad.

This leads to an unusual but logical solution to the portfolio-building problem when optimisation based on risk-adjusted returns is being used. Whereas high correlation of long-period real returns is the most realistic assumption for calculating the distribution of all possible payoffs, such as when jointly deciding with a client what combination of resources, risk and target outcomes works best for them, the portfolio diversification benefits will be greater if low correlations are assumed. In each case, goal-planning and portfolio building, the more conservative assumption is adopted.

Rational, mathematical processes for building portfolios at the asset allocation level run into powerful practical resistance due to non-rational factors. These could be agent-driven (such as 'clients never think me clever when Japan goes well but they think I'm stupid whenever it goes badly because any idiot could see the whole country is a mess'). They could also be client-driven ('I may be wrong but I think the market will never recover'). Non-rational factors are real. There is no point planning a super-rational journey if, when some emotive expectation appears to have been borne out, the client bails out of the portfolio or the agency relationship. Some practical accommodation needs to be found for including client or agency biases into the process. It helps if the effects of this on risk-adjusted portfolio returns can be quantified, so the bias is open and collaborative. Whatever the accommodation made, it should resist strongly the outright exclusion of Japan.

Forming return expectations for Japan

Knowing how badly Japan has done relative to other markets and to its own 'expected' trend (in other words, compared with the returns if after falling it had actually managed to revert to its trend), what should we now expect as returns in the future?

We answer this question two ways: our way, using the information contained in its own real return history, and the conventional way, using widely followed measurement of fundamental value as a proxy for future returns. Both make the same presumption that a low 'valuation' now is associated with higher returns in the future. What we find is that both support the case for low current valuation, high 'value'.

No Monkey Business model

Our expected returns are generated from historical data for achieved real total returns: a single factor. The standard deviations are derived from the same data with an adjustment for currency risk relative to the pound and for the length of data. The projection process draws on historical market data for all the major markets to model the uncertain ('stochastic') path of continuously-compounding, logarithmic, real total returns. The data characteristics that influence the simulated path are randomness (the next period level is correlated with the last plus or minus a random innovation) plus a correlation with the observed trend (the 'mean reversion' coefficient) whereby the trend acts against the random effects like a weak magnet.

Our expected returns and standard deviations are specific to the planning horizon. In the comparison below, we take two horizons, of 10 and 20 years. The contribution to the return of the assumed mean reversion is greater for 10 years because the historical data shows that most of the correction of large deviations is usually complete by 10 years and that further gains from it are then likely to be very small.

The comparisons are for each of the four major equity markets or regions with long historical evidence of their real return behaviour.

	Market Value	10-yr Projection		20-yr Projection	
	Ratio	Return %pa	SD	Return %pa	SD
UK	112	5.4	4.4	5.7	2.6
Europe ex-UK	101	7.0	7.0	7.0	5.0
USA	96	7.2	5.1	7.1	3.1
Japan	60	9.0	5.9	7.8	3.9

The Market Value Ratio measures the current deviation relative to the trend of real returns for the whole history to date. If deviations above or below trend are predictive of future returns below and above trend returns, it follows that these ratios are implicit measures of 'value'. Ratios as close to 100 as those for the UK, Europe and the US imply essentially normal valuation levels. This is still encouraging considering the risks in the economy, as they impact of those on future returns would be far greater if the starting point was very high equity valuations.

On this basis Japan stands out as the only market with exceptionally high value. As the only one, it is also the market whose 10 and 20-year projections are significantly different from each other.

The standard deviations², as a measure of the uncertainty associated with these mean expected returns, are also higher for Japan than for other markets except for Europe. Apart from the fact that all three foreign markets have higher standard deviations than the UK because of currency risk, this reflects the fact that we only observe data from 1957 (and in Europe's case from 1970, although data for some of its individual constituents go back further).

Returns of 9% pa over 10 years, plus or minus 6% (in two years out of three), are very good, for an equity market. They are not as exceptional as the 12% pa projected by the model in 2003 (the return-

² The 20-year annualised standard deviations are less than the 10-year deviations but when compounded for a longer period the range of outcomes is still wider, the longer the period. Because our model assumes mean reversion, the widening of the range is, however, much less than if the series were purely random. It is the use of annualised standard deviations that has led to a common misconception, even amongst many professionals, that *the risk of holding equities* itself diminishes with time.

generating model dates from 1999) but the Market Value Ratio of 36 at the low point was truly exceptional and, as noted earlier, equalled only by the UK in December 1974.

Conventional measures

Our source for conventional market valuation measures is FTSE, as the FTSE All World series of indices compares most closely with the data we observe for our own measure of value. These measures are shown below for a representative range of indices. They may surprise the reader who has not been following Japan closely.

	Yield %	Return on Equity %	Price/ Book	Price/ Earnings	Price/ Cash Earnings	Price/ Sales
Japan	1.53	10.4	1.6	16.0	9.6	0.8
USA	2.05	16.8	2.6	15.7	14.4	1.3
UK	3.78	19.5	2.3	11.8	8.9	1.2
Europe ex-UK	3.78	19.2	2.1	11.7	7.1	1.0
Asia-Pacific ex Japan	2.73	17.5	2.6	16.0	11.4	1.7
BRIC	1.58	22.6	3.5	16.7	11.1	2.3
All World	2.53	17.1	2.3	14.2	10.0	1.2

There is a mathematical connection between price to book multiples and return on equity that is captured in the price earnings multiple. A low price earnings multiple is not necessarily cheap if the return on equity is also low, as this suggests future growth will also be low. Likewise, high return on equity does not make a market cheap if the price to book ratio is also high. The relationship between market value, book value, profitability and growth in per share earnings is one of the reasons why big differences in 'top line' growth (GDP for a country, sales for a company) narrow considerably when calculated in per share growth in earnings and (via retentions) in the book value.

Japan has the lowest price to book ratio of all the markets. In fact, on some indices the ratio is now below 1. The only occasion when the ratio for the Nikkei Stock Average was below one at both the highest and lowest point for the year was 1957. Between 1958 and 1985 the ratio was between 1.1 and 3.1. 1985 marked approximately the start of Japan's irrational stock and land price boom. Between then and the 1989 peak, ratios were between 3 and 6 times.

However, Japan's return on book value is currently quite low at 10.4% versus a world average of 17.1%. Where different indices produce a higher or lower price to book ratio this is likely to be offset by differences in the observed return on book.

It is reasonable to assume that Japanese profitability is relatively low because its poor economic performance is out of step with the rest of the world. This would appear to be confirmed if the price to sales ratio were quite competitive with other countries. In fact, Japan's ratio of 0.8 is the lowest in the table, implying low expectations for future relative profitability as well. If investors took the view that profitability in Japan was due to improve relative to other countries, both price to book ratios and price earnings multiples would be higher than they are. Lower valuation measures suggest there is no expectation of catch up or indeed no expectation other countries are about to contract a similar economic malaise resulting in declines in their profitability to Japan's level.

By Japan's own standards, earnings-based valuations are also low. Obviously, they are much lower than in the 1980s but that alone does not denote good value. But the current multiple of around 16

(or 11-13 on various other Japanese indices) is not a lot higher than the lowest multiples at intra-year levels of the market between 1957 and 1970. Even in 1974 the ratio was about 12. Intra-year highs back then were typically between 16 and 25.

We do not attach much significance to yield. It results from choices about the financing of corporate expansion (as between retentions, new equity or debt) and these choices are not necessarily qualitatively different. The choice often reflects investor preferences that may be driven by tax differences or simply changing culture. From the investor's point of view, too, income is an artificial construct which is why we have to look to total return for information. However, yield is part of the message about *other investors'* expectations.

1985 also marks the first time Japanese equity yields were below 1% at both intra-year lows and highs for the market. The current level of 1.5% is still quite low by international standards but is not out of keeping with the period from 1975 to 1985. Yields were substantially higher in the period of more rapid economic growth in the late 1950s and 1960s but yields were generally higher in other markets too at the time. Yields may also be lower now because of disinflation – indeed they are now higher than Japanese Government bond yields. This implies very low or even negative long-term growth in nominal earnings from Japanese corporations.

Disinflation is likely to be part of the disillusionment with Japanese equities. If as an investor you think consumers think there is no hurry to buy goods and services because they may be cheaper and will certainly not be more expensive tomorrow, you will be less interested in buying the shares of the producers of these goods and services. It may be too simplistic but investors probably do associate inflation (or at least moderate inflation) with the real wealth-creation function, and risk-premium function of equities.

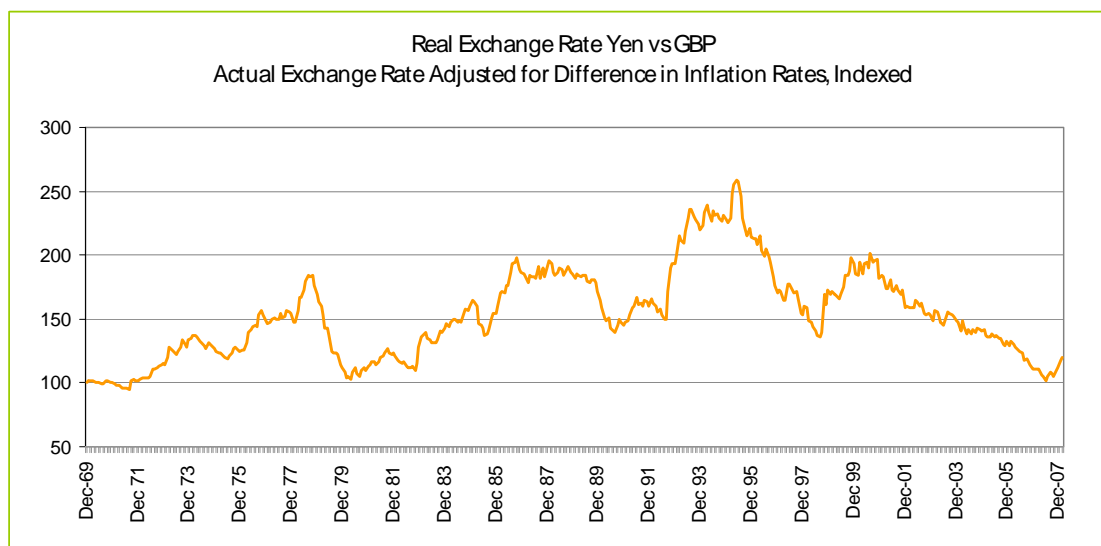
The observations of mean reversion in real equity returns on which we rely are entirely consistent with similar reversion in the fundamental measures of corporate performance, consistent with an equilibrium model of the economy: return on capital, real earnings growth and real book value growth. It is because these corporate measures are not random that other investors rely on the derived valuation measures (price earnings, price to book) as sources of information about future investment returns. But neither our measure of value nor these conventional measures translate into accurate projections of higher share prices over any specified time period. This is unknowable.

Currency considerations

Currency forecasting is also a challenging pastime. The best long-term explanation of exchange rate movements is purchasing power parity theory, based on trade competitiveness, but it is notoriously weak as a short-term predictor.

Economists attempt to calculate purchasing power parity from data about costs, selling prices and import and export volumes for traded goods. They do not agree about much. No Monkey Business prefers a naïve approach. With nearly forty years of history of floating exchange rates, we can deduce the purchasing power parity from a regression, in much the same way that we calculate the long-term sustainable trend in real equity returns, on the basis the 'collective wisdom' of millions of people participating in currency markets will, with enough time, produce a normal, unbiased distribution of estimation errors.

In the chart below we show the yen against the dollar 'real exchange rate', calculated as a monthly series where the actual exchange rate change is adjusted by the difference between inflation in each country. When the line is rising, the yen is getting more expensive and less competitive and vice versa.



In Japan's case, a regression trend for the whole period will not fit well as for most of the period, as there was an upward bias to the plots up to about 1993. A good fit will (as for other major currency pairs against sterling) have no directional bias in the trend. But in fact for the whole period parity around the mid point of the chart (150 on this index scale) could be the best estimate of parity. It is much easier to argue that, now we can see that the implied overvaluation of the yen did correct, between 1993 and 2007.

It is also tempting to suggest that the sharp rise in the yen's real exchange rate between 1992 and 1996 was a contributory factor in Japan's prolonged economic malaise and that the subsequent correction, connected with the 'carry trade' (borrowing yen to invest in high-yielding currencies), has helped its steady GDP growth in the last few years.

Has the yen now fallen too far? If the market cycle we have identified in real equity returns was exceptionally long, these currency deviations from 'fair value' are even longer – hence purchasing power parity is not much use for forecasting. But at extreme levels there may be some information in the ratios which is useful over, say, an intermediate investment period of 5-10 years. In that case, the present level of the yen against sterling appears to be extreme. If this is right, the gains of UK-based investors in Japanese equities will be boosted by currency gains. This has already been an important factor for relative returns in the first quarter of 2008. In sterling terms, the stronger yen has exactly offset the relative weakness of Japanese share prices in local currency terms.

The same approach to measuring currency value for the yen:dollar and yen:euro implies a less extreme under-valuation of the yen for the dollar but against the euro it is as extreme as against the pound. One implication is that the carry trade is yesterdays' strategy. It may not occur again on such a scale in the lifetime of today's currency traders.