BARCLAYS

Equity Gilt Study 2007

"Socialism failed because it couldn't tell the economic truth; capitalism may fail because it couldn't tell the ecological truth."

Lester Brown

"The safest way to double your money is to fold it over and put it in your pocket."

Kin Hubbard

"My problem lies in reconciling my gross habits with my net income."

Errol Flynn

"If you want to know what God thinks of money, just look at the people he gave it to."

Dorothy Parker

"An economist is someone who knows more about money than the people who have it."

Anon

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Equity Gilt Study 2007

52nd Edition

The Equity Gilt Study has been published since 1956, providing data and analysis of the annual returns in equities, government bonds and cash from 1899 in the UK and 1925 in the US. The US data are kindly provided by the Center for Research in Security Prices at the University of Chicago Graduate School of Business. Shorter histories of corporate and index-linked bond returns are also provided. The salient point of last year's return data is the continued outperformance of equities. Not since 1986 have UK equities outperformed gilts by such a wide margin.

The study also contains essays on topics that we hope may be of relevance to the long-term investor. This year's edition has a dual focus. The first portion of the study is devoted to a discussion of the interplay between climate change and the energy sector, a theme that we believe will dominate the markets in the years ahead. The remainder is broadly concerned with the practice of asset allocation. We discuss the relationship between the equity risk premium and equity risk, how new asset classes can help investors build better balanced portfolios and offer a practical example of how automated tactical allocation systems can improve portfolio performance. Finally, we mark the tenth anniversary of the UK MFR pension legislation with a review of the prevailing state of the defined benefit pension world.

We are also pleased to welcome a contribution from the team at Barclays Global Investors, who share their expertise in contemporary portfolio diversification techniques.

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Please read carefully the important disclosures at the end of this publication.

Table of contents

Chapter 1 – The energy revolution

We examine the relationship between the energy market and climate change policy. Our thesis is that the energy infrastructure of the global economy is prone to radical restructuring in the years ahead, a process that could be described as an energy revolution. The driving forces are twofold. First, the spiral higher in energy prices since 2002 has revealed that current energy supply is likely to prove insufficient in light of current demand trends. The world therefore needs a sizeable increase in capacity to accommodate the energy ambitions of both industrialised and industrialising economies. Second, public opinion in the OECD has reached an inflection point on climate change, with the political path now open for establishing an international agreement on emissions reduction. We discuss the difficulty of simultaneously increasing energy supply by 50% over the next 25 years, while also lowering dependency on hydrocarbons, which currently provide 80% of the world's energy needs. The likely effects on asset markets and modes of financing are expected to be sizeable and could dominate other fundamental factors. Investors need to place the nexus of climate change policies and energy scarcity at the centre of their asset allocation process. We conclude that the impending energy revolution may – contrary to consensus expectations – prove highly stimulatory for the global economy.

Chapter 2 – Monkey business

Equity yields have remained at high levels relative to other asset classes for the fourth consecutive year. We consider the causes of these comparatively high equity yields and find a relationship between past equity volatility and the forward-looking equity risk premium. We show how the earnings yield ratio on equities is an effective predictor of the subsequent realised equity risk premium and use this methodology to forecast above-average equity returns in European and UK markets over the next decade. We discuss whether it is possible to hedge out equity risk and conclude that doing so tends to hedge out the excess returns as well. Ironically, the distortion to equity volatility markets caused by investors seeking to limit equity risk offers opportunities for tactical relative value trades that can potentially offset actual equity volatility.

Chapter 3 – The return of diversification

This essay is a contribution from Barclays Global Investors (BGI) research, describing how investors can make use of the increasingly wide range of markets and instruments available to build better portfolios.

Markets have developed to the point where it is now much easier and cheaper to access more precise risk exposures. While this is of course a great boon, the task of aggregating these risks into a diversified portfolio is now more complex for the end investor.

The theoretical framework for building a diversified portfolio dates back to the work of Markowitz and Sharpe in the 1950s, but the practical implementation has been fraught with difficulty. Correlations are notoriously unstable and indeed tend to increase when times are bad. Furthermore, estimating future returns from past performance requires more than clever statistics: financial and economic reasoning is needed to build appropriate models and thus create optimal portfolios. The article describes how the best answer need not be the classical "market weighted" portfolio, and outlines techniques by which investors' aversions to poor returns can be accommodated within the portfolio construction process.

Chapter 4 – Send in the clones

We continue last year's theme of decomposing hedge fund returns. The cases for and against hedge fund replication models have been heavily debated over the past year. Following poor hedge fund performance in the wake of the May 2006 equity market sell-off, there have been increased concerns over whether hedge fund returns were predominantly market-dependent or due to manager skill. Numerous attempts have been made to replicate hedge fund returns, and market commentators predict a proliferation of investable synthetic hedge fund products. These synthetics may provide a cheaper alternative to the "2 and 20" fee structure often charged by hedge funds. However, there remains the risk that synthetic models will be unable to protect the investor from extreme downside risks, while a skilled manager may be more able to navigate the financial markets during turbulent periods. We examine an alternative approach to replicating hedge funds, which provides a forward-looking view of different asset classes, as well as a stop-loss mechanism to protect an investor when markets are hit by extreme events.

Chapter 5 – The state that I am in…

Our final essay celebrates, if that is the right word, the tenth anniversary of the short-lived MFR. It has been 10 years since the introduction of the Minimum Funding Requirement and the abolition of Advanced Corporation Tax relief. Since then, the "pensions crisis" has rarely been far from the headlines. It has prompted a comprehensive overhaul of the regulatory framework and there have been changes to accounting regulations in an attempt to shed some light on the "black hole" at the heart of corporate balance sheets. The growth of "liability driven investment" (LDI) strategies has increased the use of equity and fixed income derivatives to help manage exposure to both equity and interest rate risk by the construction of hedging portfolios. We review some of the main features of the changed pension landscape and consider the future.

Chapters 6 and 7 – Asset returns

We publish last year's US and UK asset returns, placing them within a historical context. Broadly, equities strongly outperformed bonds and index-linked securities, which posted negative returns. UK gilts and index-linked markets performed very poorly in 2006, both ending up in the eight-worst historical deciles, while equity returns were far above the long-run average.

UK equities returned 11.4% after inflation, against minus 4.4% for gilts, minus 2.1% for index-linked and 0.4% from cash. The average UK equity outperformance over gilts (the equity risk premium) during the past 107 years is now 4.2%, an increase of 0.2% from last year's calculation. US equities and bonds performed in a similar manner to the UK markets, with equities posting above-average returns while bonds did very poorly. Adjusted for inflation, equities returned 13.3%, Treasuries minus 1.2% and index-linked Treasuries minus 4.6% after inflation. On the back of higher policy rates, cash returned 2.2%.

Chapter 1 – The energy revolution

Tim Bond

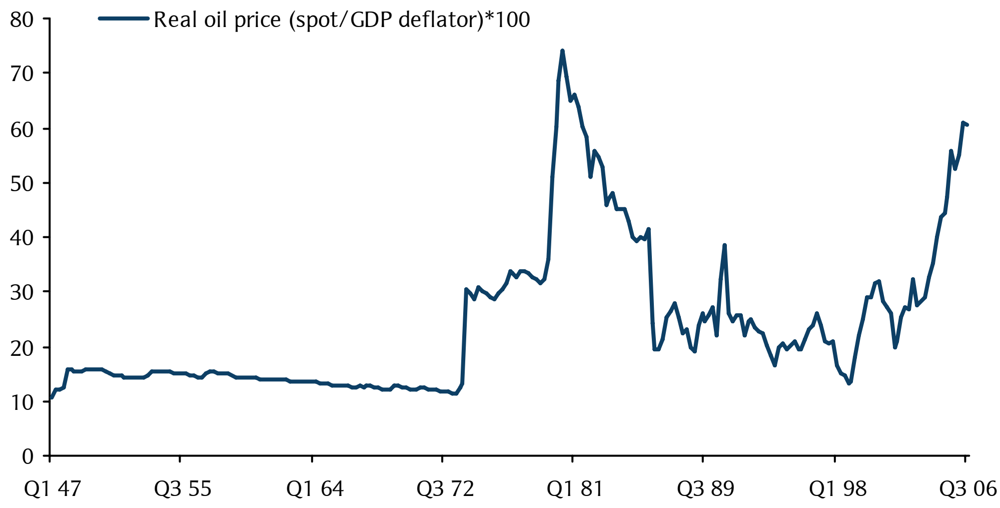
The global economy faces simultaneous requirements to sharply increase the capacity to supply energy and fundamentally restructure the way it is created and delivered. We examine the interplay between climate change and emerging energy shortages, together with the possible effect of these entwined themes on the economy and the markets.

When the history books are written, the past couple of years are likely to be seen as an inflexion point in the global economic order. In support of this somewhat portentous claim, we cite the following two observations. First, the tripling of oil prices and the equally sizeable advances in other energy prices has signalled, with little room for doubt, that there are structural problems in the system that supplies the power for our global economy. Second, 2006 marked a tipping point in public opinion regarding climate change. In confirmation of this sea-change in popular beliefs, no better candidate can be found than the rapid re-positioning of political parties and governments behind the issue, together with the attendant success of such manoeuvres in the polls. Even in the US, for so long the last bastion of climate change sceptics, 2006 saw a sufficient swing in the electorate's views that the White House ended the year beleaguered by international allies, business lobbies, most state governments and both political parties on the topic. At the current juncture, it is reasonable to state that no political party in any Western democracy is likely to enjoy success at the polls in the absence of a convincing agenda to deal with climate change. Given the hardening of the scientific case supporting human agency behind global warming, along with the rather more straightforward evidence of extreme weather conditions, this change in the architecture of public opinion is as it should be. It is always rather hard to deny something that is happening right under one's nose.

The critical points are that our hydrocarbon-fuelled global economy has a problem both in the supply of future energy and in the drastic environmental externalities of past energy use. To say that these two perceptions are dissonant is to be guilty of substantial understatement. Put bluntly, the world has simultaneously discovered that the supply of energy may not match future demand and that the type of energy currently supplied is incompatible with survival. Market prices signal the need for dramatic increases in the supply of hydrocarbon-based energy, while political shifts signal the need for an equally dramatic decrease in the use of hydrocarbon-based energy. In the nexus of this conundrum lies the market, which is where the ultimate distribution of capital and resources are eventually transacted. The clash between these two apparently conflicting themes is therefore of paramount importance to the future behaviour of both physical and financial markets over the long run. It is, we are persuaded, suitable subject matter for this study. We begin with a brief discussion of the prevailing condition of energy scarcity.

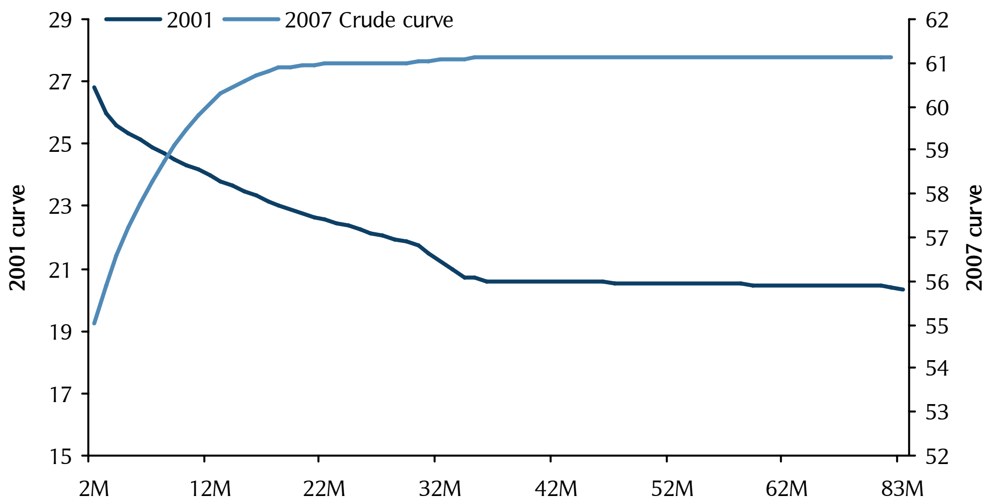
The signs of a dysfunctional global energy supply are reasonably obvious. In real, inflation-adjusted terms, oil prices have risen back to levels last seen during the late 1970s, when a combination of OPEC supply restrictions and revolutionary change in key oil-producing nations severely constricted the availability of oil. Meanwhile, in comparison with the recent past, the oil and coal energy futures curves are now upward sloping, rather than negatively sloping, implying that the market is persuaded of a lasting and endemic oil supply scarcity, rather than a temporary disruption. Throughout most of history, spot oil prices have been negatively correlated with the oil forward curve slope, the slope inverting as and when spot oil prices rose. Today, that condition no longer applies. The positive curve slope signals a worsening supply demand imbalance as time progresses.

Figure 1: Real oil price, 1947-2007



Source: Haver.

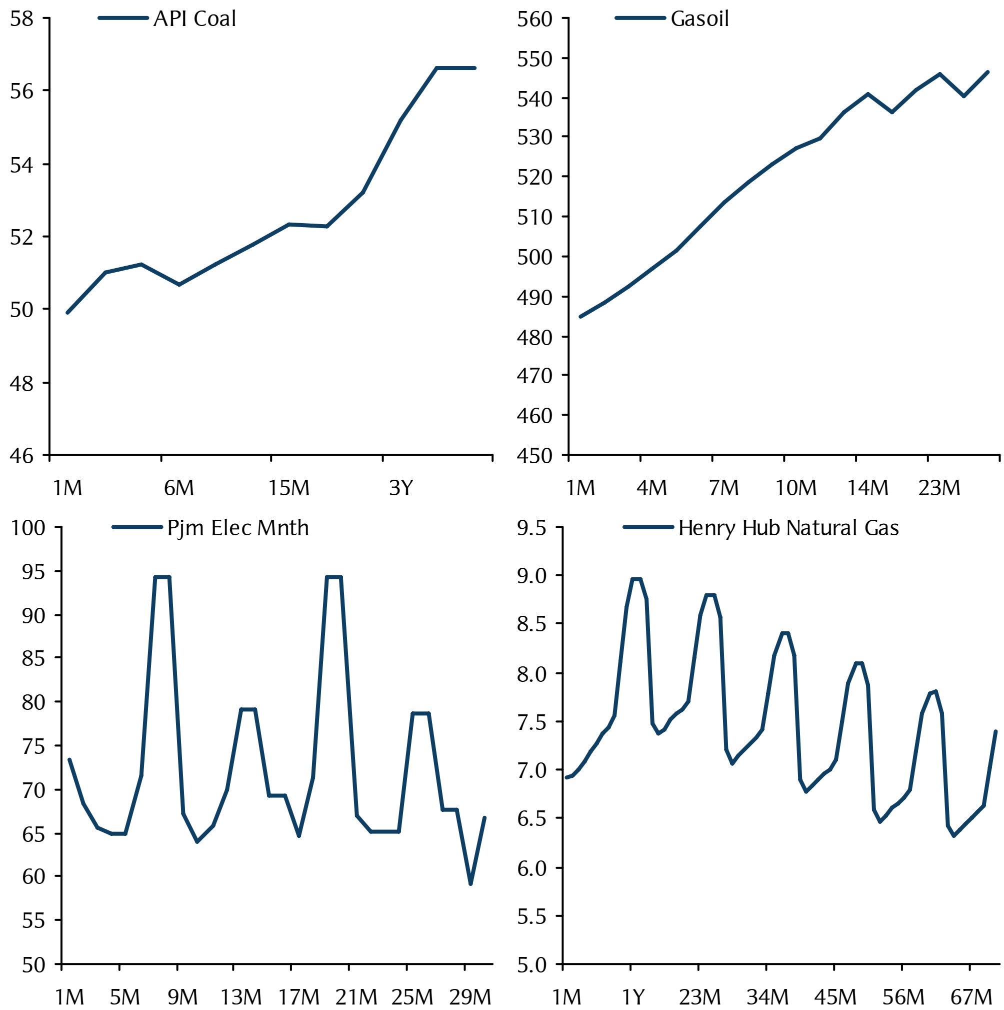
Figure 2: Oil forward curve, by month, 2001 and 2007



Source: Bloomberg.

The condition of contango (when future prices are higher than spot prices) is not confined to oil in the energy complex. Oil product curves are also upward sloping, while the other major hydrocarbon, coal, is also characterised by an upward sloping curve. By way of contrast, the electricity curve is flat and the natural gas curve downward sloping.

Figure 3: Coal, natural gas and electricity forward curves

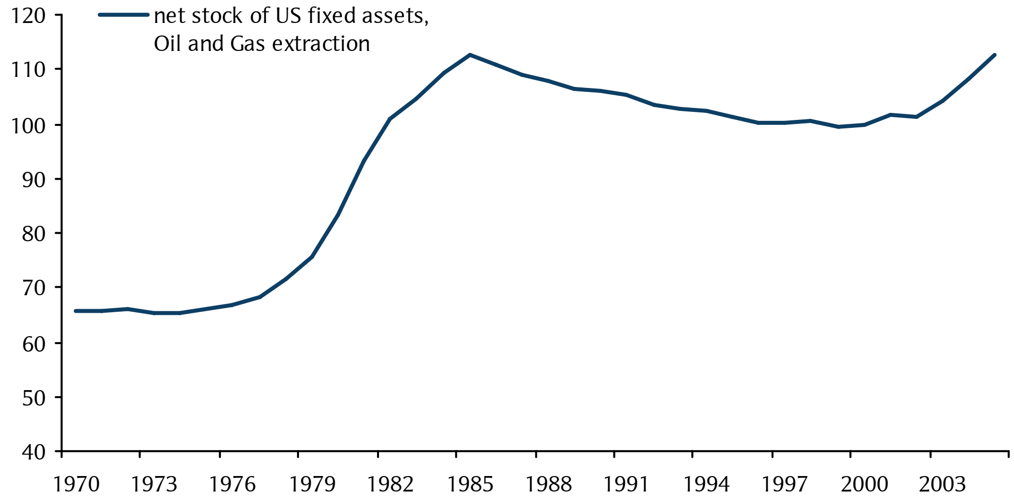


Source: Bloomberg.

A crucial point is immediately evident. The forward curves for energy sources that emit the most CO_2 are upward sloping, whereas the curves for cleaner energy are downward sloping. From this observation we can deduce that as yet, the markets do not believe that policy changes will successfully reduce global demand for the dirtier fuels in favour of cleaner energy sources. The respective slopes of the energy curves seem to be presenting us with a vote of no confidence in the implementation of climate change policies, the cornerstone of which has to be effecting a reduced demand for heavy CO_2 emitters such as oil and coal.

The energy forward curves seem, therefore, to be priced in accordance with a simple extrapolation of current demand and supply dynamics. And indeed, the rise in energy demand during the current business expansion has been the dominant pricing point for the markets. The key shock to the system has been the extraordinary rise in demand from China and India, occurring against the backdrop of the strongest and most synchronised global economic growth seen in the past 30 years. The margin of safety in supply has narrowed to a wafer, with any threatened or actual supply disruption sending prices soaring. As is widely remarked, the world is reaping the consequences of underinvestment in the energy sector during the 1980s and 1990s, which was the market response to stagnant or falling real energy prices. It is sobering to note that the net capital stock for US oil and gas production peaked as far back as 1986, falling persistently through to the current energy price shock, from which point it has only just managed to return to the prior peak. Thus, the stock of physical capital in the US oil and gas sector is no larger than it was 20 years ago.

Figure 4: US net stock of capital equipment, structures, US oil and gas production

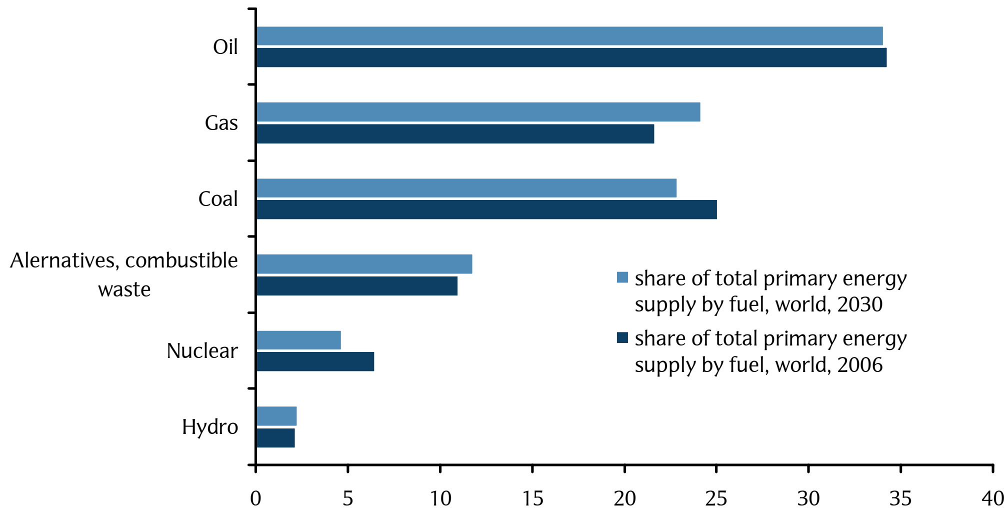


Source: Haver, BEA.

The task of matching future supply with future demand is Herculean. The latest estimates from the IEA suggest that $20trn (in 2000 dollars) is needed in energy investment between now and 2030, a sum that is close to 1.25% of global GDP and over 5.5% of total global investment spending. So far, attempts to raise investment in the energy sector have been self-defeating, as increases in nominal spending have been devoured by cost inflation. For the sake of example, the IEA calculate that in the five years to 2005, nominal global spending on upstream oil and gas investment doubled to $225bn, yet the inflation-adjusted increase was in the mid-teens. Indeed, as cost inflation in the industry grew more virulent, real investment actually fell slightly from 2003 onwards. It should be noted that of the $20trn in required energy investment, slightly more than half is to replace existing infrastructure, rather than meet new demand. Our commodities analysts believe that the IEA estimates may be somewhat conservative, since the pace of deprecation in the existing infrastructure is likely to be greater than assumed by the IEA. The evidence so far is that the world is not doing a very good job of investing sufficiently to sustain current supply, let alone meet projected demand growth.

Global energy demand is projected to rise by just over 50% during the next 25 years, with the usage of coal growing the most in absolute terms. Currently, slightly less than 60% of total global primary energy needs are supplied by coal and oil. Unsurprisingly, in the absence of a policy regime change, the IEA does not expect the dominance of oil and coal to change very much over the next 25 years. Figure 5 displays the current and expected share of total energy supply by source.

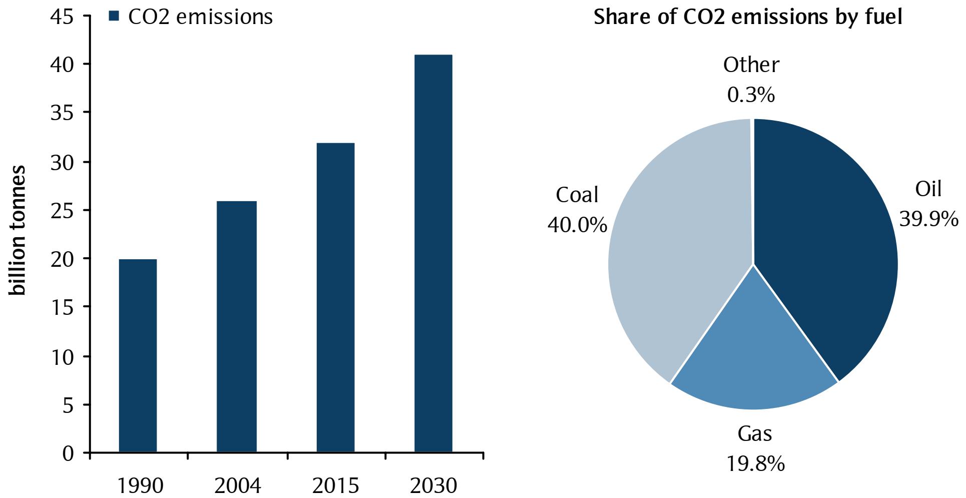
Figure 5: Total primary energy supply, global, by fuel: now and 2030



Source: IEA.

The dominant share of the dirtier hydrocarbons in projected global energy supply lies at the core of the climate change problem. Since coal and oil are definitively the greatest CO_2 emitters of all the various fuel sources, it is unsurprising that CO_2 emissions are projected to soar in the years ahead.

Figure 6: Expected change in global energy CO_2 emissions, emissions by fuel

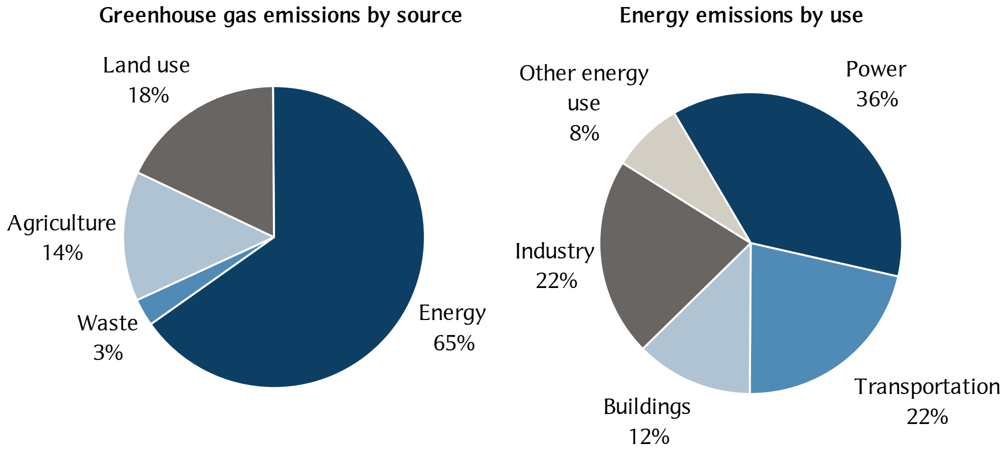


Source: IEA.

An increase in CO_2 emissions of such a scale is not a viable option. According to a summary of current climate modelling contained in the UK HMG Treasury Stern Report on climate change, a stabilisation of greenhouse gas emissions at current levels will commit the planet to a 2-5 degree warming over the next 45 years. A rise to the middle of this projected range would take global temperatures up to levels not seen for the past three million years, producing a climate that is far outside the range of human experience. Various feedback mechanisms prompted by a rise in temperature, such as thawing of permafrost and a reduction in the oceans' ability to absorb CO_2, could amplify this warming by a further 1-2 degrees. However, if emissions rise at the rate predicted on the basis of a business-as-usual scenario, the central estimate of temperature increases would rise to a 6.5 degree warming, with an upper risk boundary at 10 degrees, before accounting for feedback risks. In economic terms, the Stern Report estimated a central risk of a permanent 20% loss of per capita real consumption under such a scenario, with additional unquantifiable losses derived from mass migration and conflict. Fairly clearly, the potential risks of the business-as-usual scenario are unsupportable.

Some 65% of total greenhouse gas emissions are generated by energy use, the remainder being derived from agriculture and changing patterns of land-use, primarily deforestation and urbanisation. The bulk of the burden of any attempt to stabilise CO_2 emissions will therefore fall on the energy sector, primarily on the dirtier hydrocarbons, coal and oil, although it should be noted that gas accounts for 20% of total fuel CO_2 emissions and is not, therefore, a "silver bullet" energy source.

Figure 7: Greenhouse gas emissions by source, energy emissions by use



Source: HMG Stern Report on Climate Change.

It should therefore be clear that we have two entangled problems. The global economy needs to aggressively expand the energy supply infrastructure to meet the projected 50% increase in demand over the next 30 years, while simultaneously cutting the 80% of energy supply generated from hydrocarbons, in favour of alternative sources. The requirement is for both a sharp and sustained increase in energy investment, as well as an almost total switch in the existing and future energy infrastructure away from hydrocarbons.

Such a staggeringly complex task can only be accomplished via the imposition of a clear and reliable regulatory framework. As the Stern Report highlights, global warming results from a catastrophic market failure. Markets do not, by definition, incorporate externalities into pricing. So perhaps the real failure was our initial inability to perceive the externalities of our energy choices – and our subsequent extreme reluctance to do anything about them once those problems were recognised. Blame can be attached to the market system for the latter point, but not for the former. The market system is characterised by hefty inertia, stemming from the unwillingness of vested interests to abandon capital investments, regardless of the public good. Government policymaking is – or at least should be – the natural counterbalance to this inertia. However, when it comes to discounting externalities, the market is an idiot savant, oblivious of any factors – however looming and obvious – outside the narrow focus of its pecuniary obsession.

Yet, with the problem now recognised, the naysayers mostly marginalised and the politics favourable, the idiot savant character of the market can now be harnessed for the cure. Markets need a clear set of rules and objectives within which to operate, none more so than long-term infrastructure projects. Energy supply investments are characterised by expense, lengthy construction periods, even longer pay–back times and highly volatile input and output prices. Such factors generate considerable uncertainty and are a significant obstacle to investment. These existing uncertainties are now massively expanded by the clash between the need to expand total energy supply, while simultaneously cutting hydrocarbon dependency. Currently, the putative energy investor cannot have any certainty about where to place his or her capital. For the sake of example, the returns from an investment in coal or oil may become highly unprofitable in the event of a policy-driven decline in the demand for hydrocarbon energy. Equally, an investment in alternative power sources might not reap the expected returns if governments fail to enact policies aimed at CO_2 emission reductions. In the same vein, investment in carbon capture and storage is enormously expensive and only financially viable under an imposition of a climate change policy regime.

Given these sizeable uncertainties, it is fair to suppose that less investment overall will be forthcoming than might have been the case were the outlook more quantifiable. Or rather, very high prospective returns are needed to overcome the objection of high levels of uncertainty. So one of the likely results of a continuation of the present uncertainty might be a failure to meet the projected rise in energy demand, as investors either quail before the uncertainties or demand very high returns to compensate for the risks. The net result would be extremely high energy prices, persistent inflation and much slower real economic growth – not to mention accelerated global warming. There is therefore a near-term economic imperative – preventing the world running out of energy – as well as the medium-term imperative of limiting global warming, for enacting a clear and consistent policy regime regarding climate change.

In this respect, it is crucial that the past couple of years have seen a tipping point in global public opinion – at least in OECD countries – regarding climate change. While solid majorities in Europe, Russian and Japan worry a great deal about climate change – an average of 77% according to the Pew Centre polling – it has become clear that opinion in the US is also finally shifting. The percentage of US citizens agreeing that the earth is warming has risen 7 points to 77% over the past six months, while the percentage agreeing that this is due to human activity is running at 47%, against 40% six months ago. Contributing to the hope of a material change in US climate policies is the fact that the Democrats won control of both legislative houses in the November midterm elections. While climate change is generally not seen as a partisan issue elsewhere in the world, US opinion on the topic is strangely divided by party lines. Thus as recently as January 2007, Pew Centre polling found that a remarkable 46% of Republicans who defined themselves as part of the "conservative" wing of the party deny that the world is getting warmer, while only 20% believe that warming is due to human agency. Conversely, 92% of self-defined "liberal" Democrats believe in warming, with 71% agreeing that it is due to human agency.

However, when it comes to taking action against global warming, the Pew Centre's latest (January 2007) polling is instructive. Aside from conservative Republican voters (unsurprisingly given that nearly half do not believe that the globe is warming), majorities exist across the rest of the political spectrum in favour of the government taking action against climate change. Moderate Republicans are 51% in favour, Independents 58%, conservative Democrats 61%, and liberal Democrats 81% in favour of government policy shifts. The political odds in favour of the US adopting a more proactive and multilateral stance on global warming has therefore become a good deal more favourable over the past few years, a shift that is likely to continue.

So it is becoming more apparent that governments now have the political cover to take the necessary action and forge the required agreements. Complementing public opinion is the pressure from businesses, where an increasing demand for a policy framework can be heard. Uncertainty about the future energy policy regime is complicating the task of forecasting, the net result of which may become a progressive postponement of many investment decisions and hence slower overall economic growth. Given these factors, it is reasonable, we believe, to suppose that coordinated policy changes will indeed be enacted at the international level over the next few years. This is not to deny the extraordinary complexity of securing agreements. The burden on the developing economies, who are not responsible for the existing stock of greenhouse gases, but who will be responsible for a growing share of the future increase in emissions, is particularly difficult to ascertain. However, for all the complications, it is hard to believe in persistent inaction, particularly given the goad of extreme weather events on public opinion. It is easy to imagine some future government of the day being blamed for causing a second New Orleans, rather than merely being blamed for failing in the aftermath of the disaster.

It would therefore seem to be close to a racing certainty that climate change policies will be enacted. Whether straightforward tax or emissions cap-and-trade policies are adopted, the eventual objective is in no doubt. Succinctly put, the net result of policy change will be to progressively price dirtier hydrocarbon fuels out of the market, while pricing alternative clean energy sources into the market. Once the framework for achieving this objective is established, uncertainty will be reduced and capital will start to flow more aggressively in the appropriate directions. However, the transition period will still be characterised by a high level of risks. Balancing the need to increase total energy supplies while decreasing hydrocarbon dependency will be difficult to achieve. In particular, it is not clear how hydrocarbon producers will be persuaded to expand capacity to meet immediate energy demand increases, when there is a global policy to reduce longer-run hydrocarbon reliance. This would seem to raise the risk of general energy shortages. Conversely, as the Stern Report points out, there is a risk of gamesmanship on the part of hydrocarbon producers, seeking to extract as much rent from their resources while there is still demand, while simultaneously attempting to influence the debate by making hydrocarbons a more financially attractive immediate energy source. However, such gamesmanship would seem to require levels of spare capacity that are glaringly absent from the current supply regime. A more robust complication is that both carbon sequestering and clean coal technologies offer some alternative to a general switch away from hydrocarbon fuel sources.

The outlook is therefore characterised by high levels of uncertainty, to say the least. Even after the establishment of a clear global policy framework, uncertainty would persist regarding the success of the various competing replacement and mitigation technologies on offer. It will be very hard for an investor to know which horse to back – or whether the race has even started. The prospect of high levels of risk and uncertainty means that outlook is also biased towards a continuation of very high and volatile energy prices. History demonstrates that such an outlook is not only of importance solely to the investor in the energy sector. Rather, the experience of the 1970s, when the global economy was last in the grip of endemic energy scarcity, suggests that investors in all asset classes feel the impact of energy price volatility.

Positive asset returns during that decade were extremely narrowly focussed, the distribution of returns rather contradicting the then newly acquired consensus regarding portfolio diversification. Figure 8 illustrates average geometric annual real returns from the main asset classes in the UK and US during the 1970s. It appears that most asset classes with the exception of commodities and oil itself offered derisory inflation-adjusted returns.

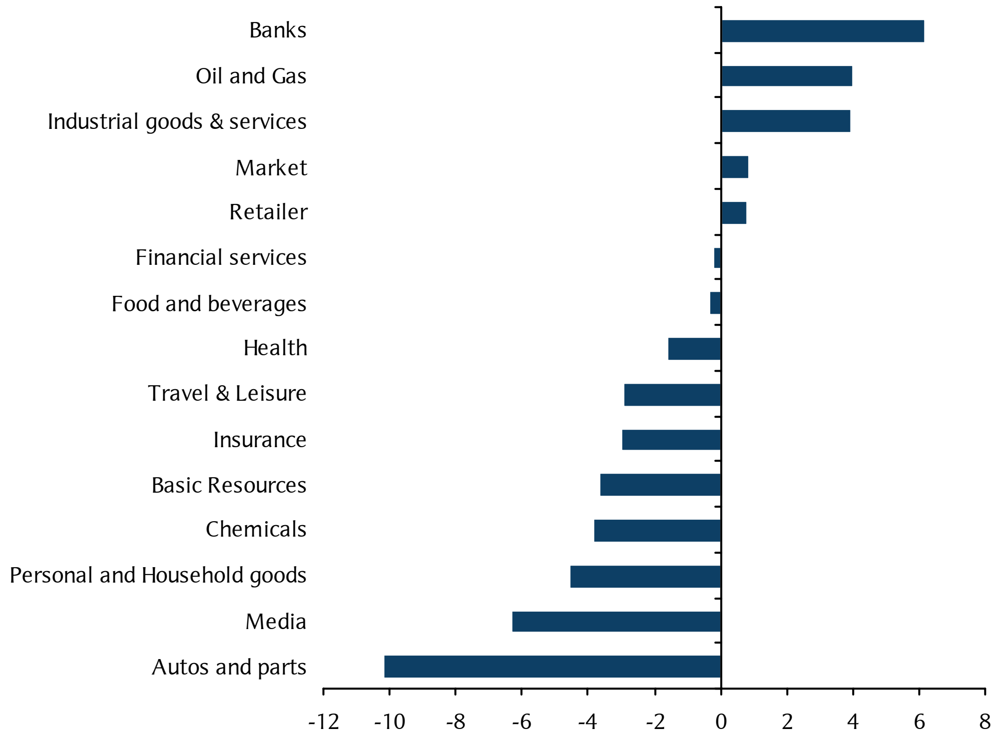
Figure 8: Geometric annual real returns by asset class, 1970-80, US/UK

Real return, geometric annual, 1970-80			
UK all property	2.66%	US residential real estate	2.64
UK equity	0.40%	US equity	1.40%
UK bonds	-3.20%	US bonds	-3.60%
UK cash	-3.10%	US cash	-1.10%
Commodities	7.27%	Commodities	13.16%
Oil	18.90%	Oil	24.84%

Source: Barclays Capital.

Meanwhile, even within the main asset classes, positive returns were focussed on a handful of sectors. Figure 9 displays the geometric annual return by sector in the UK stock market during the 1970s. Only three sectors in the UK delivered a positive total return, the rest averaged losses. A similar story is conveyed by US returns, where only four sectors of the market achieved positive real returns. Fairly clearly, aside from banks – which are usually able to re-price their products quickly to changing macro environments – the only positive return sectors were either the producers of energy or the industrial sectors that built the energy infrastructure.

Figure 9: Geometric annual real returns by sector, UK equities, 1970-80

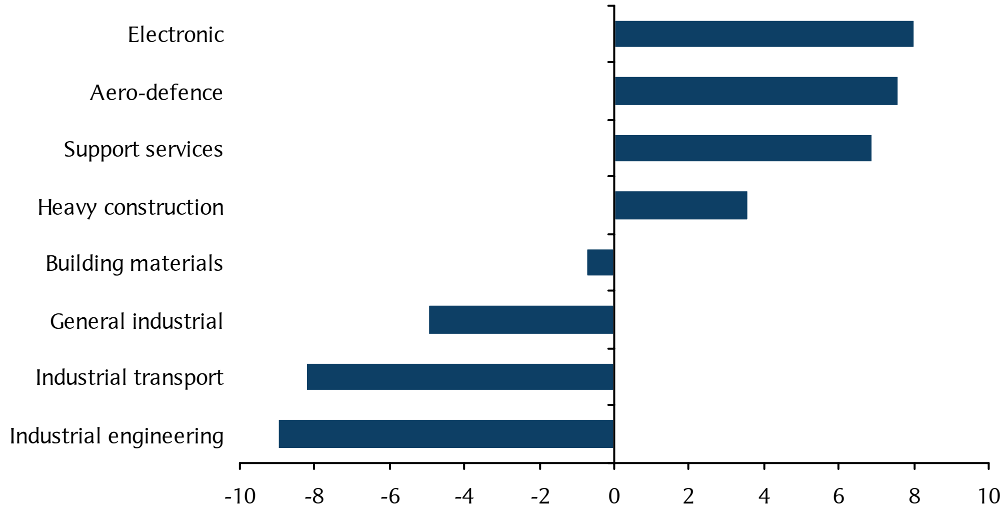


Source: FTSE, Datastream.

Even within sectors, positive returns were narrowly focussed. Thus half the sub-sectors of industrial services delivered average negative returns during the decade, even though the sector itself was the third-best performing.[1]

[1] *We have excluded the technology sector from the analysis, since it consisted of just two companies during the decade.*

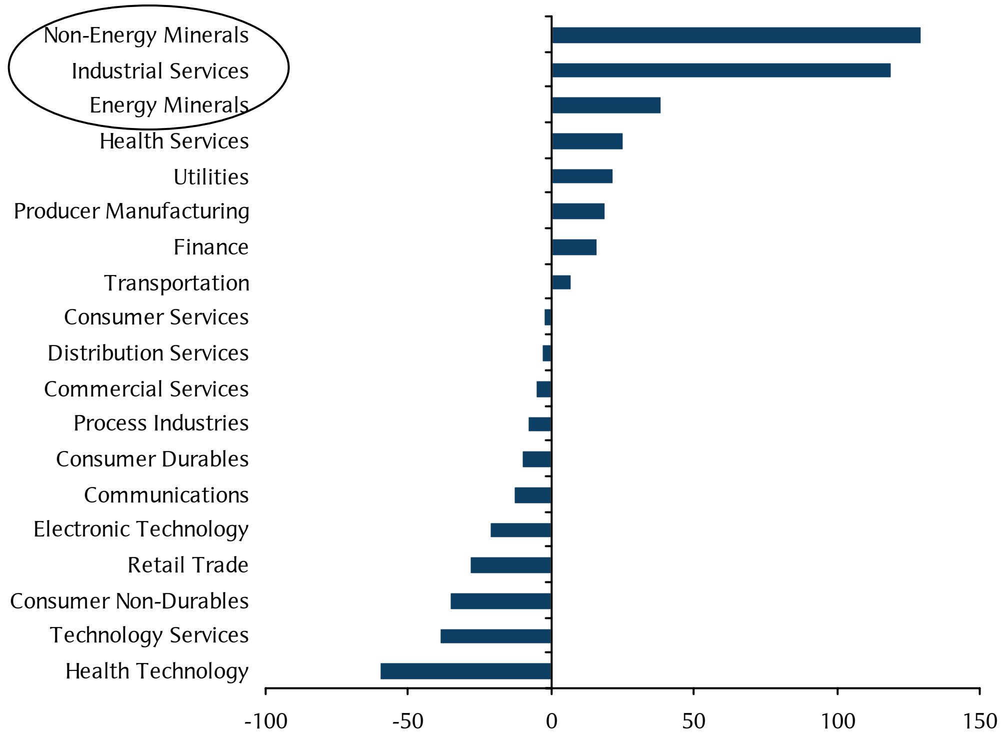
Figure 10: UK sub-sector performance, geometric annual total real return, 1970-80, Industrial Goods and Services sector



Source: FTSE, Datastream.

The 1970s was not a decade that rewarded extensive diversification. To judge from the distribution of returns across assets, energy scarcity was the dominant theme. The necessity for investment in the sector was overwhelming, to the exclusion of all other areas of activity. And indeed, since all other economic activities rely on energy, it is reasonable that the allocation of capital to the energy sector took precedence over the allocation to the rest of the economy. In a market system, high returns are typically part of the signalling mechanism that diverts and prioritises capital flows into the areas that most require investment. Although this mechanism is certainly not foolproof, as the persistence of bubbles and panics would seem to indicate, it happens to be the way the world currently works. So, with a dual requirement for a large increase in energy investment and a comprehensive restructuring of the existing energy infrastructure, it is reasonable to suppose that the market signalling mechanism will play its customary role. Investments in enterprises that alleviate both the energy scarcity and the hydrocarbon dependency should reap very strong coincident returns, while returns from other activities will tend to be less impressive. An analogy might be the way that the technology sector dominated returns during the internet and IT booms in the late 1990s, while returns ex-technology were modest. Reinforcing the market signalling mechanism is the more basic point that short of investment by fiat, climate change policy is most likely to be enacted through the price and return mechanism. The net result, we believe, is that while future asset return characteristics will – hopefully – not resemble a precise reprise of the 1970s, there will certainly be more than an echo in the way that returns are distributed across assets. The bottom line is that coincident returns will have to play their usual role of directing capital into the appropriate investment, if the dual tasks of energy supply restructuring and expansion are to be accomplished. Some such process is already at work and this analysis is by no means theoretical. Figure 11 displays world equity sector total returns, since the end of 2004, relative to the market. More than an echo of the 1970s is audible, with the three best sectors being natural resources – energy and non-energy – together with industrial services.

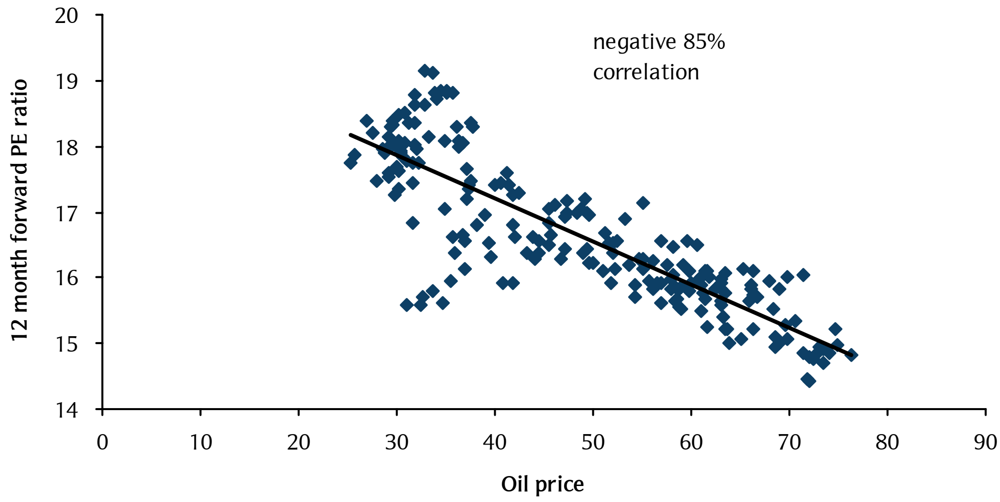
Figure 11: World equity sector returns Jan 2003 to-date, minus world total market return, Factset aggregates



Source: Factset.

The narrowly focussed returns of the 1970s were not only a symptom of the capital signalling process at work. They were also a symptom of the effect of energy scarcity on the macroeconomy. Not to put too fine a point on it, high energy prices catalysed high inflation, which in turn adversely affected asset returns. Notably, this was true for nominal as well as inflation-adjusted returns. Weak returns from bonds are understandable, given the large rise in interest rates and consequent drop in bond prices that occurred over the decade. Weak returns from equities are perhaps harder to understand, given the salient point that corporate earnings did not merely keep pace – but actually exceeded – inflation over the period. However, rightly or wrongly, the markets attached a lower rating to corporate earnings; PE ratios in the US, for the sake of example, ended the decade at half the level at which they started the decade. It is interesting to note that if we inflation-adjust corporate earnings over that period, calculating PE ratios from after-inflation earnings, the drop in PE ratios is barely visible. This exercise would seem to suggest that the market implicitly treated the portion of earnings growth "derived" from a rise in the price level as transient and non-recurring, even though in practice it was both sticky and recurring. In any event, the linkage between PE ratios and inflation, visible over the broad sweep of history, would seem to remain intact in the current era. Certainly, since 2003, which is when the oil price rally started, the correlation between weekly observations of the spot crude oil price and observations of the US total market 12-month forward PE ratio scores a very high negative 85%.

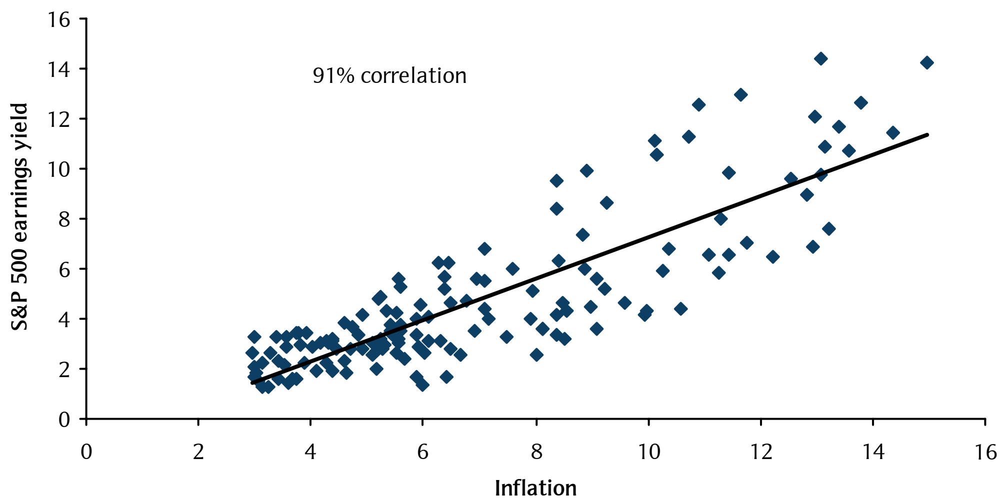
Figure 12: Weekly correlation, oil price, 12-month forward US equity PE ratio, lagged two weeks



Source: Factset, Haver.

This relationship is very much in line with the long-run positive correlation between headline inflation and the US market PE earnings yield (100/PE). Since 1971, the average correlation between quarterly observations of these two series is positive 91%.

Figure 13: Correlation, 1970-to-date, quarterly S&P 500 trailing earnings yield and headline inflation rate (% Y/Y)



Source: Haver.

So the recent evidence of sector returns and the oil-inflation-PE ratio linkage suggests that the relationship between the energy system and market returns is alive and well. Thus far, the liaison between the energy theme and the markets has been simplistic, based largely on the premise that future energy supply is insecure and requires significant capital investment. Certainly, as we have seen, that is the tale told by the energy forward curves. The story so far has been more or less a straight reprise of the 1970s, without so much of that decade's inflation.

However, as the climate-related energy theme starts to influence market thinking, which will occur as the political commitment to policy changes becomes more obvious, the interplay between the energy scarcity and energy source reallocation themes will become far, far more complex. Securing sufficient fresh capital to accommodate a 50% increase in long-term energy demand is one thing: simultaneously replacing 80% of the existing energy infrastructure with alternative energy technologies is quite another. Meanwhile, the macroeconomy will likely be influenced by a progressive incorporation of externalities into the price level. In the interim – which is where we are right now – a high level of uncertainty will exist as the eventual framework for climate change policies is hammered out at the international level. Once a global policy is established, the existing level of uncertainty will fall and, in so doing, will alter the discount rates for the relevant enterprises. Discount rates for clean energy activities will drop and those applying to the old hydrocarbon economy will rise. These changes will lead to large changes in the net present value of the various energy and energy-related assets. It is worth noting that these shifts will apply at a national, as well as corporate, level, perhaps becoming incorporated into credit spreads and foreign exchange values. Needless to say, we expect a sizeable increase in capital expenditures. The principal beneficiaries of the energy revolution may very well turn out to be the companies that build the new clean energy infrastructure, much as the industrial goods and services sector benefited in the 1970s.

Since there are very few human – and no economic – activities that do not require an energy input, there is no section of our economy that will remain untouched by these changes. The task of managing this change might sound hopeless, but when one recalls that over half the existing global energy infrastructure needs to be replaced in any case over the next 25 years, the outlook grows less Sisyphean. In a similar vein, vast sums of capital were mobilised to build the information technology economy during the 1990s, a significant portion of which were squandered on hopeless innovations with very little overall detraction to growth. Indeed, in the five years after one of the largest misallocations of capital in history, the global economy enjoyed its fastest pace of growth for 30 years.

A shortage of capital is certainly not an obstacle to implementing the investment demanded by climate change and energy scarcity. Indeed, given a suitable policy framework, investment in energy supply may become more attractive to the large pool of pension fund assets, currently searching for stable, long-term, inflation-linked products. The nature of the current energy supply business ranges right across the spectrum of risk, from tightly regulated utilities to speculative wildcatters. However, the shift away from a hydrocarbon economy may also shift the business towards the less risky end of this spectrum. The very nature of the hydrocarbon business, characterised by uncertain geology in politically unstable or unpalatable countries with challenging operating terrains is, in part, responsible for the energy sector's reputation as a higher risk investment. A hydroelectric station in Scotland has a rather different level of inherent risk to a drilling rig in Iraq. The basic argument would be that many clean energy sources – wind, water, geothermal are obvious examples – are innately less risky than hydrocarbons because their input costs are much more stable. A good part of the historical risk in clean energy business models is actually imported from the wild swings in hydrocarbon prices, which by turn render the clean model uncompetitive or viable. So as the regulatory mesh tightens around the energy business, with the relative pricing of different fuel sources subject to an imposed discrimination based on emissions, there is an opportunity for policymakers to remove some of the volatility of returns that often plague the sector. The case in favour of a completely free market in energy has been undone by the inability of the market to find a clearing price in the 1980s and 1990s that was compatible with sustained long-term investment. The energy price spikes of the past three years are a clear example that open markets often fail when dealing with long-term horizons. With a tighter government control on energy pricing and less volatile inputs, the energy supply business should become characterised by more stable and predictable returns. Governments could thus mobilise the pension capital of their aging populations behind energy revolution.

The energy revolution is not dissimilar in scale to the technology revolution. Meanwhile, the financial world is characterised by a superabundance of return-seeking capital of a scale not seen since the late nineteenth century. If ever the time were ripe for such an energy revolution, it is now. And like all historical adoptions of general purpose technologies, the process should prove immensely stimulative to economic growth. Oddly, the climate change policy debate is couched in terms of the cost to GDP growth. Even the proponents of policy shifts tend to assume a negative effect on growth. This stance is underselling the actual impact of an energy revolution. All of the historical changes in energy supply – from dung to wood to coal to oil – were stimulative for the economy concerned. Every major technological change was accompanied or followed by faster economic growth. To be sure, innovation can sometimes fail to meet the challenge of external threats, but the requirement now is as much for application of existing technologies as it is for innovation. The outlook for the next few years will be dominated, we believe, by the twin energy themes. It will be coloured both by high levels of risk and uncertainty, but also by extraordinary returns. Above all else, the impact of the replacement, restructuring and expansion of our energy infrastructure cannot be ignored. Just as the personal computer cannot be un-invented, neither can the impending energy revolution. And if it doesn't happen, nothing else will.

Chapter 2 – Monkey business

Tim Bond

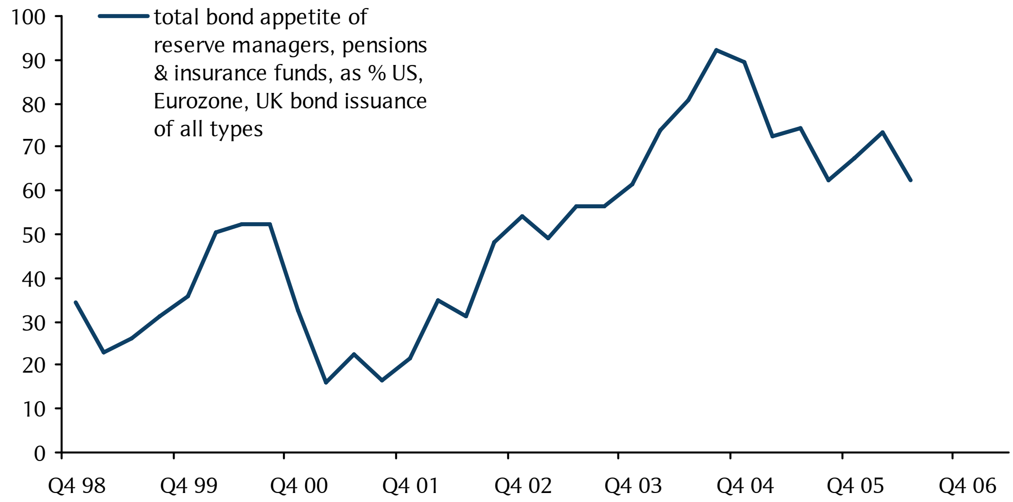
Forward-looking measures of the equity risk premium remain at high levels in comparison with the historical average. We discuss why this should be the case, analysing the connection between past volatility and equity valuations relative to other asset classes. We consider the relative riskiness of equities compared to bonds and the feasibility of hedging away equity volatility.

Bear markets cast long shadows. For the fourth consecutive year, financial market valuations in 2006 were characterised by higher-than-average prospective equity risk premia. Relative to the fixed income and property markets, equity yields have traded at unusually elevated levels since the end of 2002. This statement is true of most major geographical regions. Equity yields are also inexpensive compared to the historical average. The PE on the S&P 500, for example, is close to its 130-year mean of 15.5. PE ratios in the UK and Europe, at 12-14, are explicitly cheap to the long-run average. Cheap equity valuations, however, are mostly found in the large cap sector, whose weightings dominate the main benchmark equity indices. Mid-cap and small-cap valuations are more expensive, buoyed by the recent period of very easy credit conditions and the associated M&A and LBO trends.

Conversely, bond and real estate yields are at very low levels, with yield curves, ex-Japan, flat or inverted. Bond market time and duration risk premiums – the extra yield earned for lending for longer periods – are either minimal or negative. Credit spreads, whether for emerging market or corporate debt, are also very tight – in some cases at record lows. It is certainly true that very low levels of corporate leverage justify narrow credit spreads. However, low corporate leverage ratios are more a function of very buoyant profit growth than a subdued corporate borrowing appetite. Indeed, corporate borrowing has been brisk over the past couple of years, as the sector – in aggregate – has been issuing debt to retire equity. Given the relative pricing of equity and debt, the corporate borrowing requirement is likely to stay strong over the medium term. The same cannot be said of the trend for profits, which will eventually submit to the usual cyclical pressures. Neither spot credit spreads – nor indeed their forward values – contain any extra risk premium to compensate investors for this near-inevitable progression in the cycle. In a similar vein, where calculable, risk premiums in alternative asset markets are also slim in comparison to history. The negative roll yield on commodity index investments is a case in point, directly illustrating how flows into a popular asset class have eliminated part of the prospective return that made the asset class attractive in the first place.

The persistence of high equity yields relative to yields on other assets begs an explanation. In a purely mechanical sense, the causal factors are easy to identify. Capital flows from global foreign exchange reserve managers, pension funds and insurance companies have strongly favoured bonds over equities since the end of the equity bear market. The increased appetite for bond investment has been very large in relation to the supply of bonds. Figure 14 illustrates this point, showing how the aggregate demand for bonds from global reserve managers and US/European pension and insurance funds has risen from an average of just over 30% of total annual net European and US bond issuance (of all types) to an average of 75% of new issues.

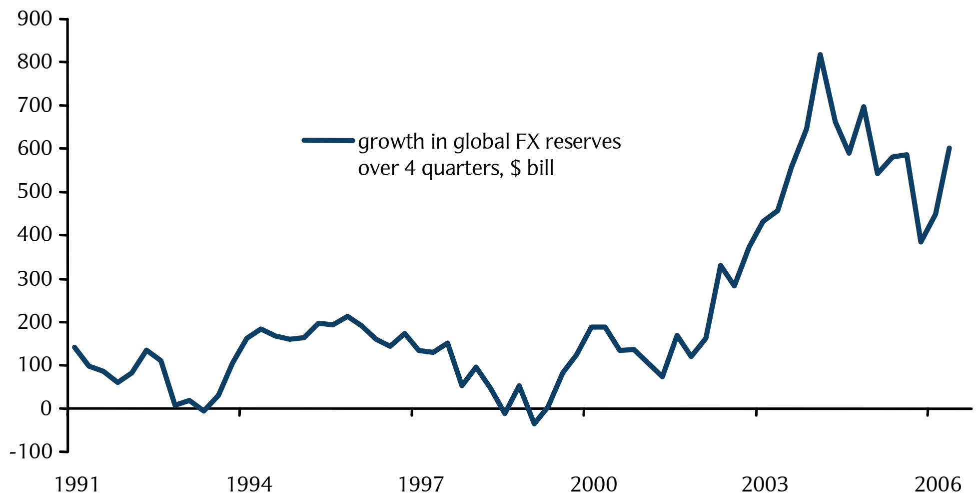
Figure 14: US, UK, eurozone pension and insurance bond buying, plus global reserve growth, expressed as a percentage of total US, UK, eurozone bond issuance of all types



Source: Haver, EcoWin.

Considering each of these factors in turn, we can state that global foreign exchange reserve managers have an extremely high appetite for bonds because FX reserve growth – due to a combination of managed currency regimes and oil producer current account surpluses – is exceptionally strong. Figure 15 displays the growth in global foreign exchange reserves, highlighting the dramatic acceleration from 2003 onwards.

Figure 15: Global foreign exchange reserve growth, $ bn, annual



Source: EcoWin, IMF.

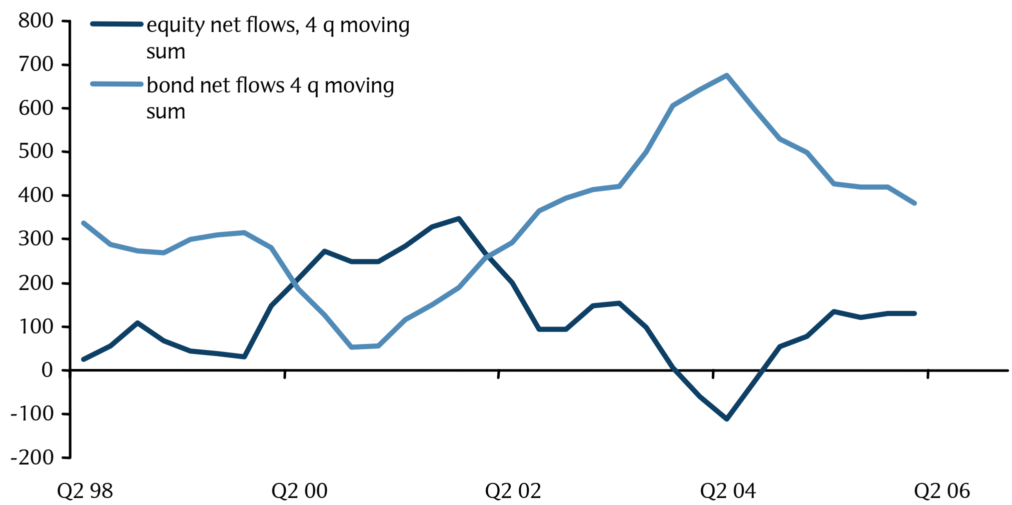
The growth in reserves occurs in part because some trade surplus economies run managed foreign exchange regimes. Meanwhile, the surge in oil prices has increased the revenues of oil-producing nations faster than they spend them, the balance being temporarily parked in foreign exchange reserves. The depression of global long-term interest rates is not, therefore, a natural function of global trade imbalances, as is often argued. Rather, the depression in interest rates occurs because an unusually large portion of global trade receipts are ending up in the hands of official reserve managers, whose choice of asset classes has been constrained to high quality bonds, bills and cash. In the absence of managed currency regimes, the proportion of trade receipts going to reserve managers would be far smaller, as would the proportion of global capital being channelled into bond markets. The same can be said of the rally in oil prices and reserve growth among the oil-producing nations.

The lack of bond market risk premium is not, therefore, attributable to global imbalances, but to a coincidence of factors. Crucially, these factors cannot be expected to persist indefinitely. Many reserve managers, including China and other Asian central banks, have accumulated reserves far in excess of the level appropriate for fundamental requirements. Consequently, they are starting to actively diversify their excess reserves out of bonds into higher return asset classes. In a similar vein, most of Asia – again including China – are either allowing exchange rate appreciation or moving towards a floating exchange rate. Finally, the oil price cannot be expected to rally indefinitely, particularly given likely international action to reduce the demand for hydrocarbon-based energy supplies. That portion of the depression of bond market risk premia that is attributable to global reserve managers – and their flows are responsible for the lion's share (60-70%) of this phenomenon – should be considered temporary.

A popular alternative explanation for the depression of bond yields is that the world suffers from a condition of excess savings relative to investment. This explanation is flawed because it fails to explain why equity yields remain elevated, when yields on other assets are depressed. A condition of excess saving would surely be characterised by depressed yields on all assets.

Turning to the pension and insurance world, it is clear that European, US and UK long-term investors have displayed little appetite for equities and a pronounced liking for bonds ever since the end of the equity bear market. This factor also helps explain why equities trade cheap relative to other asset classes. Figure 16 illustrates the point, showing aggregate flows into equities and bonds by US and European pension and insurance companies since 1998. From 2002, net investment has overwhelmingly favoured bonds over equities.

Figure 16: UK, US, eurozone, net flows in $ bn, equities and bonds, four-quarter moving sum, all pension, insurance and state or local government retirement schemes



Source: Haver, Datastream.

The exhibits above provide a technical explanation for why bond market risk premiums are so low. With so much of the net bond supply being absorbed by long-term money managers and foreign exchange reserve managers, there are few bonds left to satisfy the appetites of all the other financial market actors, such as mutual funds, households, hedge funds, banks, and hedgers. It should be noted in passing that the bond-buying appetite of some members of this latter group of market participants has also increased. There has been a widespread trend in which leverage is used to meet high-return targets in a low-yield environment. This is particularly notable in the credit markets. In itself, the increased demand for bonds driven by increased leverage is a factor depressing yields. The increased use of leverage as a mechanism to circumvent low yields also renders the system far more brittle than might have previously been the case. History shows unequivocally that leverage is never the correct response to low prospective returns from any asset class. As is invariably the case, markets are failing to recall a primary lesson of financial history, which is that expensive assets should be sold, not levered.

Although the combination of trade imbalances and managed currency regimes provides an adequate explanation for the explosive growth in foreign exchange reserves, the asset preferences of pension and insurance managers are a little harder to explain. As we have commented in previous editions of this study, a good part of the answer is provided by changes in accounting practice and solvency regulations in the wake of the equity bear market. The general thrust of these changes towards a mark-to-market accounting framework has been to significantly increase the consideration given to equity volatility in asset allocation decisions. Meanwhile, the adoption of IAS19 accounting standards for pensions and the use of spot bond yields to discount pension liabilities mean that the accounting value of these liabilities now moves in line with bonds.

For a fuller discussion of the interplay between pension legislation and asset allocation, we refer readers to last year's edition of our study. Suffice it to say in the present context that we do not believe that there is any *a priori* natural linkage between bond yields and pension liabilities. Indeed, both the choice of bond yields as the discounting mechanism and the practice of valuing assets at spot market prices seem rather arbitrary. In tandem, they might be provoking inefficient asset allocations by pension funds. To offer an example, diversification out of quoted equities into private equity is a popular pension fund trend. Private equity, by definition, does not have a liquid secondary market, so valuations are typically conducted on the basis of infrequent accounting updates. Unsurprisingly, historical returns appear to be much less volatile than those of quoted equities, whose prospects are subjected to minute-by-minute judgment in the stock market. Yet private equity is simply public equity with additional layers of leverage; it is therefore likely to be a good deal more risky than quoted equity markets, while several orders of magnitude more expensive in management fee structures. However, pension funds that are overly focussed on the reported volatility of their assets in the sponsor's accounts may find private equity attractive. From an accounting perspective, private equity might appear to be a lower-risk investment than quoted equities, while delivering historical returns that display low correlations with equities. In the real world, nothing could be further from the truth.

Meanwhile, the volatility of the accounted value of pension liabilities that is being generated by the practice of discounting forward values with volatile long bond yields may have distracted pension sponsors from some more serious risks. Widespread hedging of this "interest rate risk" has been visible, even though the risk is essentially only of an accounting nature. Increasing longevity is actually the main risk to defined benefit pensions and bond investment is no hedge to this risk. Equity investments are probably a better hedge to longevity, given their open-ended duration, in contrast to bonds that offer a limited duration and significant reinvestment risk. Although there are almost no assets that might be considered a reasonable hedge against longevity risks, prudence suggests that a surplus of assets over liabilities is the appropriate approach to the problem. In this respect, maximising total returns from assets would be the logical goal. This would be particularly the case if a postponement of retirement ages lengthens the period before which payments need to be made and therefore extends the period under which pension plans can invest in relatively risky assets. It is, however, unfortunate that the volatility of the reported pension deficit, generated by changes in market interest rates and hence the discount rate for pension liabilities, has focussed sponsor attention on hedging interest rate risks. Such hedges only limit accounting risks and do nothing to address longevity risks. Indeed, insofar as interest rate hedging makes a call on sponsor contributions or on the assets of the fund, the practice may actually be worsening longevity risks because the capital that is employed to hedge a purely paper risk is then not available to hedge a real risk.

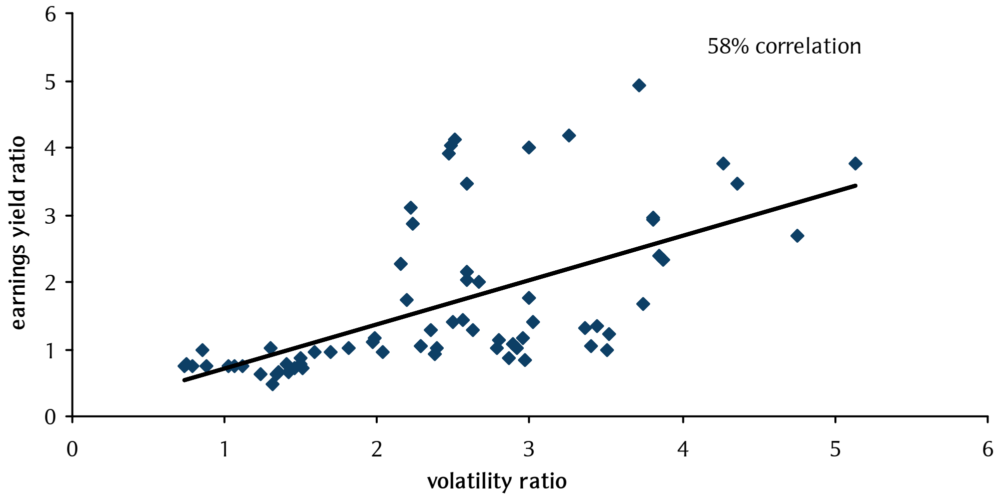
Perhaps a more efficient mechanism for satisfying the need for a clear and easily understood yardstick for measuring pension funding would be to require sponsors to publish the discount rate – ie, the required return on assets – needed to meet the cash flow projections of pension liabilities. Regulators, accountants and investors could then judge whether the discount rate was realistic, in light of the prospective returns from asset markets and the risk-bearing capabilities (creditworthiness) of the pension sponsor. Clearly such an assessment is a more complex process than the simple calculation performed under the prevailing regime. However, the assessment of a pension plan's solvency is necessarily complicated and involves judgement on a range of probabilities rather than precise point estimates. The process is not amenable to a reduction to point numbers and efforts to do just that are causing more problems than they are solving.

However, in the near term, pension fund asset allocation in Europe and to some extent in the US is being driven by the prevailing set of accounting and regulatory conventions. Much the same can be said of insurance companies. Broadly, these conventions discourage fresh investment in quoted equities and incentivise investment in long-dated bonds. To a degree, these flows are visible in capital allocations described above. Such cash flows are the tip of an iceberg, the bulk of which consists of derivative contracts in inflation and interest rates. These latter flows are subsequently hedged in the cash markets, contributing the persistent environment of high equity yields, low long-term bond yields and low real yields.

Historical equity volatility as a governor for the ex ante equity risk premium

Nonetheless, it would be wrong to blame the change in long-term investor tastes entirely on accounting and regulatory changes. US-defined benefit pension funds have evinced an even lower appetite for buying equities than their European brethren, even though changes to pension fund accounting comparable to the European standards have yet to be enforced. In fact, the surge in post-bubble equity distaste has many historical parallels. History shows that relative equity valuations generally reflect past, not future, risks. To judge from the evidence, it seems that the relative volatility of actual, realised equity and bond returns is a key determinant of how equities are priced relative to bonds. So the forward-looking risk premium for equities relative to bonds appears to be typically determined by the past actual risk of equities relative to bonds. Figure 17 shows the correlation between the US earnings yield ratio (trailing S&P 500 earnings yield/20 yr Treasury bond yield) and the differential between annual bond and equity volatility (standard deviation of annual returns) over the preceding 10 years. The underlying data sample runs from 1925 to 2005.

Figure 17: Correlation, S&P 500 trailing earnings yield ratio, ratio of 10-year rolling standard deviation of equity returns to 10-year rolling standard deviation of bond returns



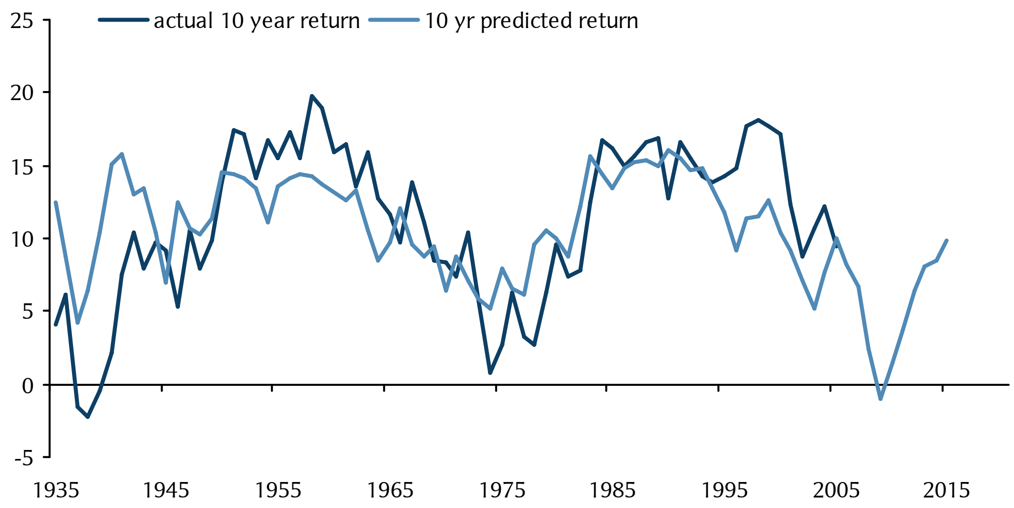
Source: Shiller, Barclays Capital.

Inasmuch as the earnings yield ratio is a measure of the forward-looking equity risk premium, the analysis tells us that its determination is partly derived from our experience, over reasonably prolonged periods of time, of relative equity and bond return volatility. Encouragingly, we do not appear to make snap judgments on the basis of very recent experience, but tend to judge on the basis of average experience over several years. Nonetheless, we cannot evade the inescapable fact that a forward-looking, expectational measure is formulated on the basis of backward-looking data. Today's condition of high equity yields relative to bond yields is a function of the equity market's high volatility relative to bond volatility over the past decade or so. Thus, the ex ante equity risk premium is in good part determined by the ex post risk ratio between equities and bonds.

Predicting equity returns and the equity risk premium

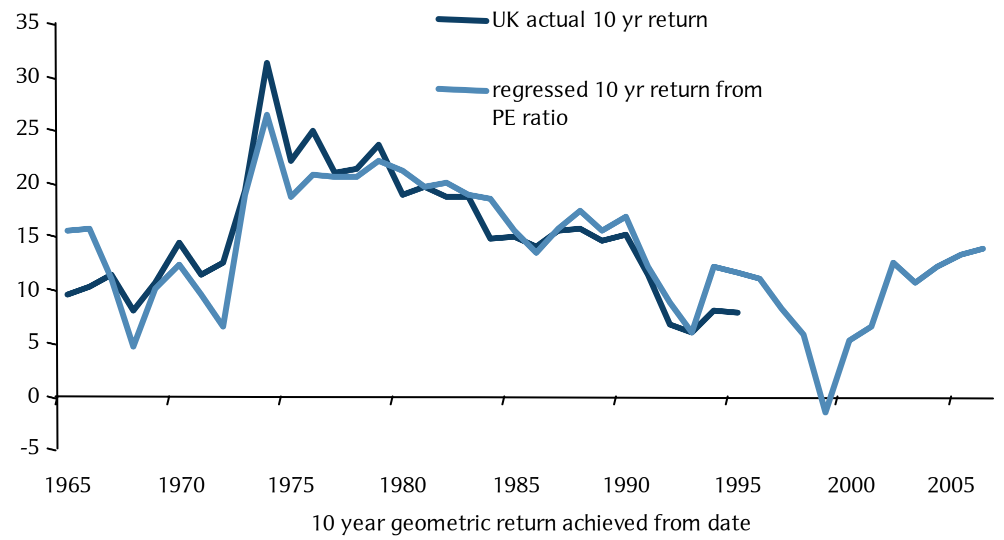
It may appear natural to price future risks on the basis of past risks but, in fact, the process is illogical. Fairly obviously, just because equities have displayed high volatility relative to bonds over the past 10 years, there is no guarantee that they will continue to evince such behaviour. We believe this situation presents patient investors with an exploitable opportunity. History tells us that the forward-looking equity risk premium – equity yield relative to bond yields – is a reasonable guide to the realised equity risk premium – the actual outperformance an investor will capture from owning equities in the future. It should be no surprise that bond yields and interest rates determine subsequent bond and cash returns. In the same vein – as we showed in last year's study – equity yields, in the shape of PE ratios, are an effective guide to future average equity returns. To prove this latter point, consider the following three figures, in which we show the relationship between PE ratios and subsequent rolling returns from equities in the US, UK and German markets. The graphs display actual rolling nominal returns and returns regressed from the PE ratio at the start of each of these periods. As you should be able to see, the relationships are strong and the models robust.

Figure 18: US equity returns over rolling 10-year periods, actual and regressed from PE ratio at start of each period



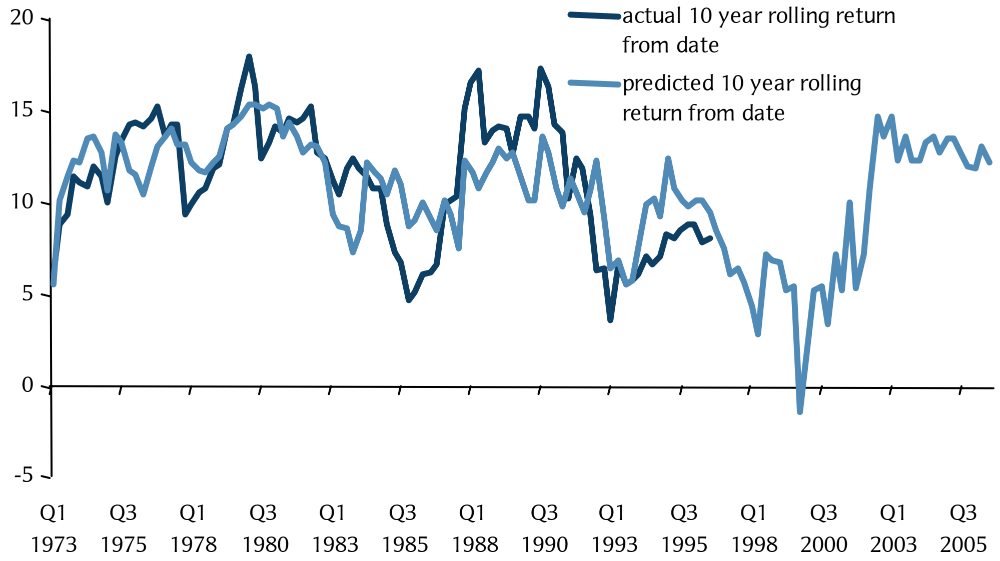
Source: Barclays Capital.

Figure 19: UK equity returns over rolling 10-year periods, actual and regressed from PE ratio at the start of each period



Source: Datastream, Barclays Capital.

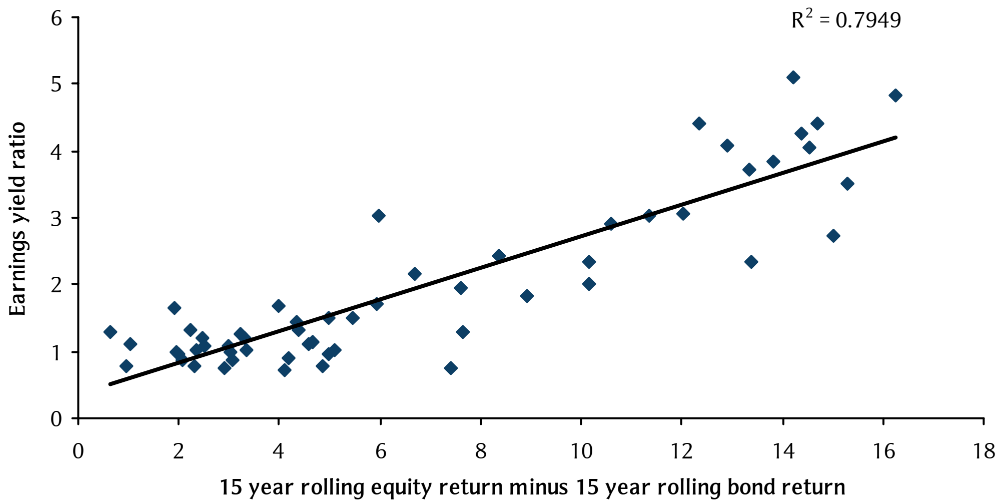
Figure 20: German equity returns over rolling 10-year periods, actual regressed from PE ratio at the start of each period



Source: Datastream.

Given the correlation between bond and equity yields and their subsequent returns, it is unsurprising to find that the ratio between bond and equity yields also gives a good steer on the future performance of bonds relative to equities. Figure 21 displays the historical correlation between the US earnings yield ratio and the future average US equity return minus the bond return. In other words, this graph shows the correlation between forward looking measures of the equity risk premium on any given date and the equity risk premium that is actually realised after that date.

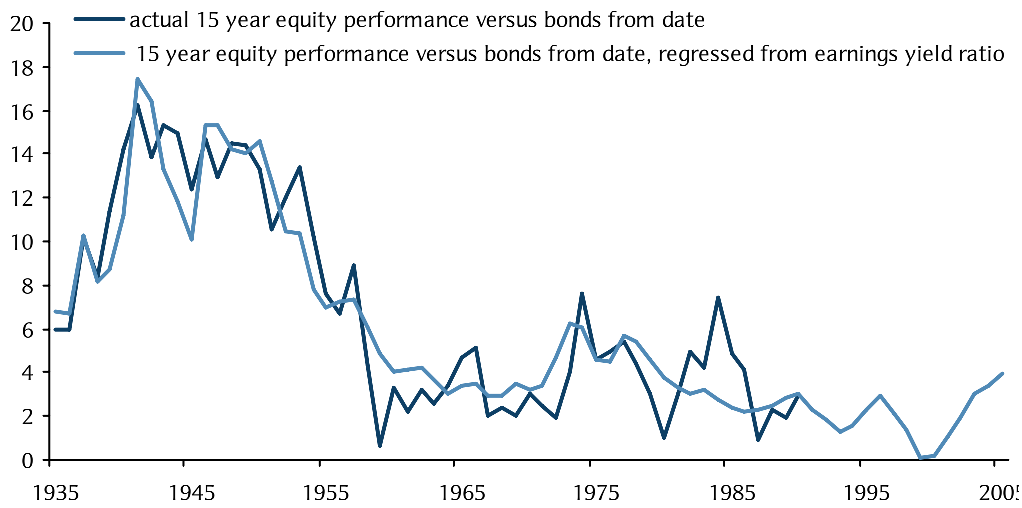
Figure 21: Correlation, US earnings yield ratio and subsequent realised US equity risk premium over bonds, 15-year rolling periods



Source: CRSP, Shiller.

The statistical relationship is strong enough to allow modelling. Figure 22 displays the results of this exercise using our CRSP US database, where we have used the trailing earnings yield ratio as the sole variable in a regression against subsequent 15-year average equity return minus bond return. The graph confirms that the earnings yield ratio is a good predictor of the long-term ex-post equity risk premium.

Figure 22: Rolling 15-year realised US equity risk premium, actual and modelled from the earnings yield ratio at the start of each 15-year period



Source: CRSP, Shiller.

To summarise, the level of the forward-looking equity risk premium – defined here as the trailing earnings yield ratio – tends to be determined in good part by the collective experience of the past relative volatility of equity returns relative to bond returns. In turn, the forward-looking equity risk premium has historically proven a good guide to the subsequent realised equity risk premium. We note that this analysis only holds good for relatively extended time periods. For periods under five years, the statistical basis for these assertions weakens. In other words, the earnings yield ratio is only a good guide to future equity returns relative to bonds when we consider longer-run averages. In short, it is easier to predict long-run equity returns – both relative and absolute – than short-run returns, because the passage of time smoothes away the randomness of short-term equity returns. In essence, equity returns are unevenly distributed over time.

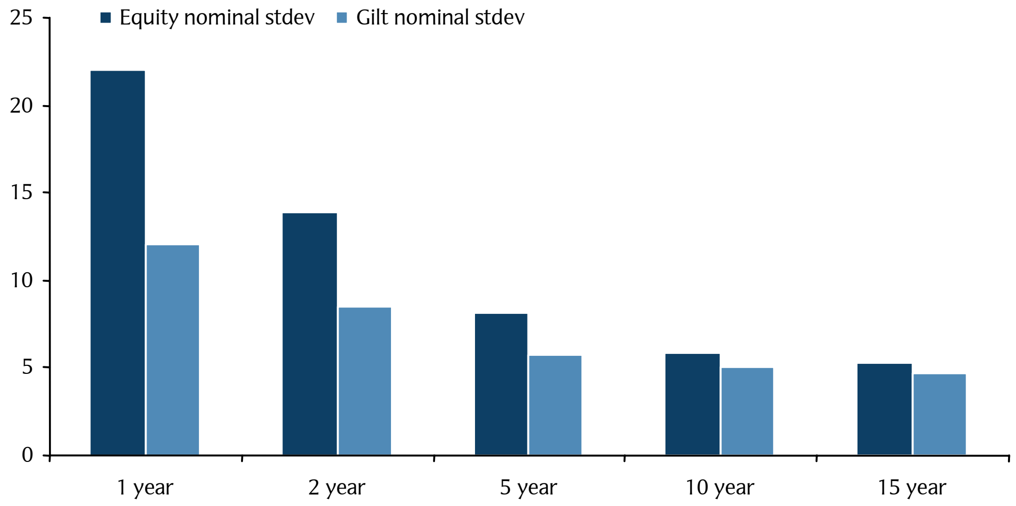
To relate these findings to the current situation, we can say that the elevated level of ex ante equity risk premium reflects the rise in equity volatility relative to bond volatility in the late 1990s and earlier in the present decade. Conversely, the high level of ex ante equity risk premium is strongly suggestive – if history is any guide – of a higher realised equity return versus bonds over the next 5 to 15 years. To be more specific, the US markets are suggestive of a future realised risk premium of around 4% over bonds, in line with the long-run average, while the more cheaply valued European markets suggest an excess equity return of 7-8% over the next decade, higher than average. In the UK, the evidence points to a realised equity risk premium of around 7%. These risk premiums apply to equity investments made at current valuations. Put simply, the fact that long-term pension, insurance and foreign exchange reserve managers are currently eschewing equity investment in favour of bond investment has created a relative valuation of equities and bonds that is strongly biased towards producing outperformance from the former asset class.

This analysis is very much in line with common sense. Intuitively, the equity risk premium exists to compensate investors for the higher volatility of equities relative to bonds. Periods of high equity volatility versus bonds give rise to a demand for high forward-looking equity risk premia and visa versa. Equities are much more volatile than bonds in the short run, but tend to outperform over the longer run, the latter return being compensation for the former risk.

The relationship of equity volatility to time and inflation

As is often observed, the relative risk of equities declines with the length of time over which they are held. To be specific, annual equity returns are more volatile than two-year geometric annual returns which are more volatile than five-year geometric annual returns. Figure 23 illustrates this point, showing the standard deviation of annual or annualised nominal returns from UK equities and gilts over varying holding periods. The volatility of both asset classes is "smoothed" lower with a lengthening holding period, but equity volatility falls faster than bond volatility.

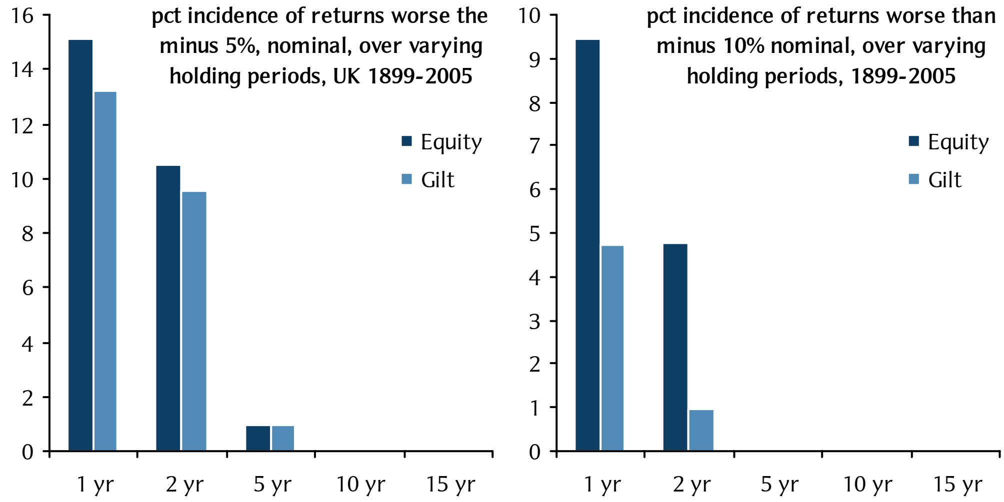
Figure 23: Standard deviation of annual and geometric annualised UK equity and gilt returns, nominal, 1899-2005, varying rolling time periods



Source: Barclays Capital.

This is true both of incidence of losses and the volatility of returns. Of course, the probability of losing 10% from equities in any given year is the same no matter the holding period. But the historical probability of losing 10% over the holding period diminishes as the holding period lengthens. Figure 24 displays the percentage occurrence of average annual losses greater than 5% and 10% over varying holding periods in the UK markets. As can be seen, the incidence of losses is higher for equities over any holding period shorter than five years. More importantly, perhaps, the occurrence of severe losses – defined as greater than a 10% loss – is substantially higher for equities compared to bonds. However, as the length of holding period extends, so the risk of making an equity loss declines, both outright and relative to bonds. For holding periods of five years or longer, the incidence of losses greater than 5% or 10% is the same for equities and gilts. The underlying data sample runs from 1899-2005.

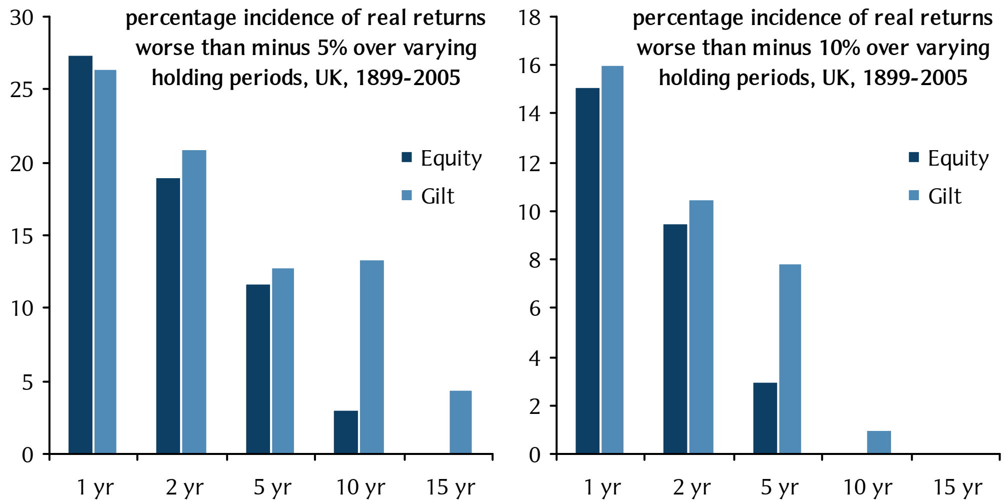
Figure 24: Percentage occurrence of nominal average losses greater than 5% and 10% over varying holding periods, UK equities and gilts, 1899-2005



Source: Barclays Capital.

At first blush, the relative incidence of equity and gilt losses seems to support the logic of the equity risk premium compensating investors for the shorter-term excess volatility of equities. However, this logic starts to evaporate when we consider real returns rather than nominal returns. Once we adjust for inflation, it becomes clear that the risk differential between equities and bonds is far narrower than when we consider only nominal returns. Indeed, as the graph on the right hand side of Figure 24 should serve to illustrate, the historical occurrence of real losses greater than 10% is lower for equities compared to gilts for all holding periods of one year and longer. To reiterate this important point, the historical record shows that equities display fewer incidences of real losses in excess of 10% than do gilts, over any rolling holding period of one year or longer. This is true of the historical record from 1899 to 2006.

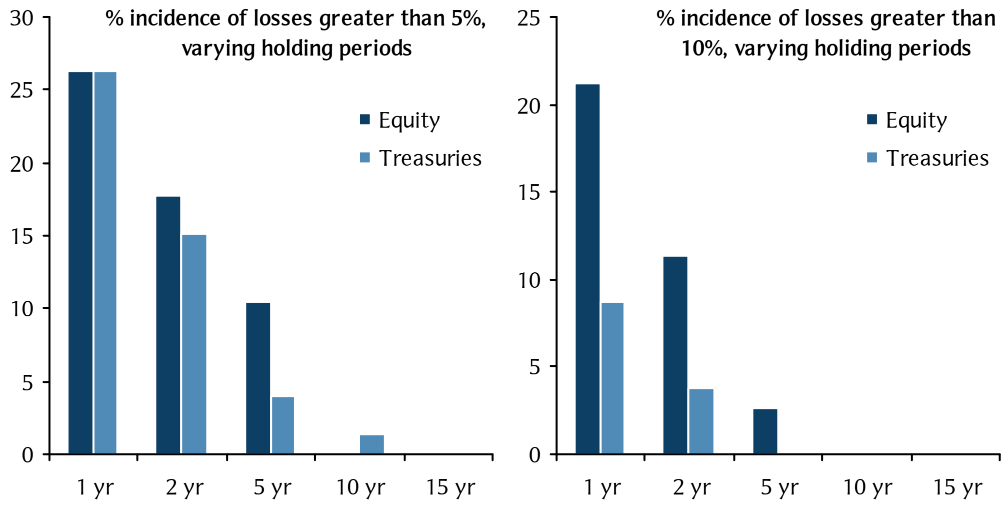
Figure 25: Percentage occurrence of real average losses greater than 5% and 10%, over varying holding periods, UK equities and gilts, 1899-2005



Source: Barclays Capital.

Of course, this finding reflects the UK's history of very high inflation. If we consider the incidence of losses in the US, where inflation averaged lower levels than the UK in the twentieth century, we do not find quite the same distribution of risk. The higher riskiness, in real terms, of US equities is not just a function of the different sample period. We repeated the exercise for UK real return data starting in 1926 and found that the incidence of losses after adjusting for inflation – either greater than 5% or greater than 10% – was higher for gilts than equities over any holding period longer than a year.

Figure 26: Percentage incidence of real losses greater than 5% and 10%, US real equity and bond returns, over varying holding periods, 1926-to-date



Source: CRSP.

This analysis can be summarised as follows.

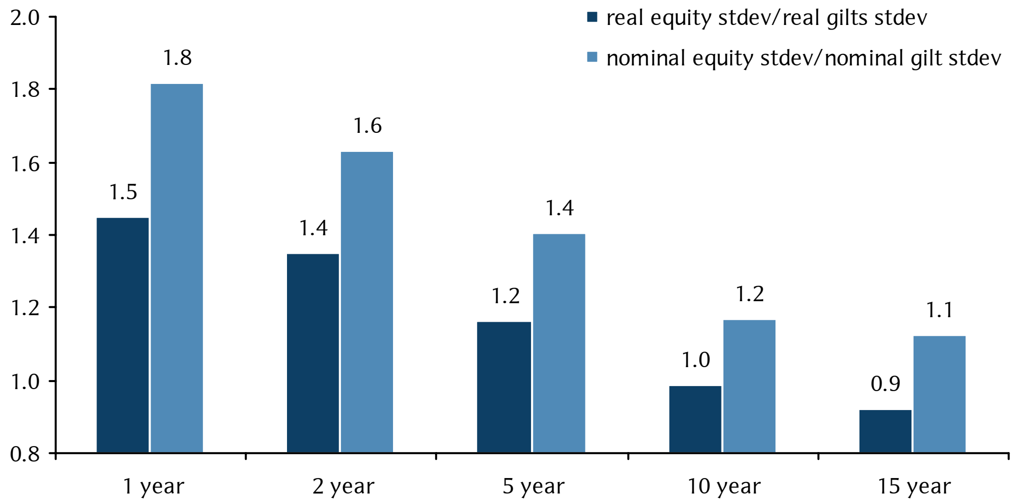
1) The relative riskiness of equities compared to bonds declines as the period of time over which the returns are calculated lengthens. This is because returns are generally positive and sporadic periods of losses are averaged away.

2) In real terms, equities are much less risky compared to bonds than they are in nominal terms.

3) Further, if average inflation rates are high enough, equities are actually less risky than bonds.

If we consider equity risk in terms of the volatility of returns, rather than just the occurrence of loss, much the same findings apply. The difference between equity and bond volatility is smaller in real terms than it is in nominal terms. As the holding period lengthens, the volatility of real equity returns declines faster than the volatility of real bond returns. For holding periods of 10 years or longer, our UK history shows that equities are less volatile, in real terms, than gilt returns.

Figure 27: Ratio of equity volatility to gilt volatility, real and nominal, over varying holding periods, 1899-2005



Source: FTSE, Barclays Capital.

Monkey investors

Our analyses can be boiled down to a single axiom, which is that the relative riskiness of equities to other asset classes depends on the intended holding period and the rate of inflation. A secondary point is also apparent, which is that the realised average equity risk premium – 4% in the UK and 4.7% in US – is considerably higher than the relative riskiness of equities to bonds. The explanation for the high equity return is most probably found in the process by which the forward-looking risk premium is set. As described above, it appears to be set on the basis of the average relative volatility of returns experienced over the medium term. However, since past volatility is not necessarily a good guide to future volatility, at least over reasonably long periods of time, the forward-looking risk premium is not always going to be appropriately aligned with subsequent actual risks. In short, after periods of high volatility, equities become cheaply valued, from which point they then deliver excess returns.

In the same vein, behavioural economics shows that investors' desired risk/return profile is not evenly distributed, exhibiting a much greater sensitivity to losses than might be expected. Such innate caution most probably results in an overweighting of loss probabilities, in turn giving rise to the excessive equity risk premium. The bias is likely to be hardwired into humans as part of a package of reflex reactions to danger that would have provided survival benefits during the early years of human evolution. A well-considered cost/benefit analysis of the probability of being eaten by a nearby predator is unlikely to be an effective survival technique in comparison with running very fast at the first sign of danger. In short, humans are biased by evolution to over-react to danger, since such over-reactions would have generated higher survival – and hence gene succession – rates in the past. And since early human culture was tribal or familial, we are also programmed to react to secondary danger signals in the shape of the behavioural patterns exhibited by other members of the social unit. In short, we are programmed to find panic – and indeed the opposite condition of complacency – infectious. However, while panic may indeed be an appropriate survival technique for the savannah, it does not translate entirely happily to the financial jungle.

No free lunch

A sizeable industry has grown up within the financial markets, seeking to satisfy the institutional requirement for less volatile short-term equity returns. The equity options and derivatives market has expanded dramatically to accommodate these needs. The difference between implied equity volatility and realised volatility is essentially the price that investors are prepared to pay to avoid short-term volatility. The price is typically quite steep and is the main reason why the simple addition of a long position in equity volatility to a cash equity portfolio is less efficacious than might be supposed in dampening actual portfolio volatility: the gap between implied volatility (which is what the investor pays to own volatility) and actual volatility (which is what the investor receives) is a heavily negative return strategy. Furthermore, not only is there a large gap between implied and actual equity volatility, but most markets exhibit a volatility skew, whereby puts are more expensive than calls. More subtly, equity index implied volatility is generally priced higher than warranted by the sum of the individual and cross-correlated volatilities of the constituent parts.

These differences are explained by the general biases exhibited by the end-users of equity derivatives. Flows into equity derivatives are typically from long-term real money managers and structured products buyers. The common strategies employed by the former involve selling upside index calls to purchase downside puts or writing covered calls on individual stocks that they may own and on which they have a more bearish opinion than the market. Meanwhile, structured products typically offer potential upside index participation via long index calls and enhanced yield via short option sales on single stocks. This is because index options are necessarily cheaper – because the level of volatility is usually lower – in absolute terms – than single stock options. Hence greater index upside participation is gained from index calls, while a greater running yield is achieved by single-stock short option sales. The general effect of these flow biases is to over-price implied volatility relative to actual volatility, impart a pronounced skew to the volatility curve and inflate the price of index implied volatility over the sum of its constituent parts.

While the strategy of curtailing near-term equity volatility via the use of derivative strategies appears to make sense, over the longer run it will likely eliminate the point of owning equities, which is their higher return. The equity risk premium is the compensation for the short-run variability or volatility of equity returns. Investors who attempt to limit the downside volatility by continuously owning puts will rapidly discover that the cost of such an insurance scheme will average out higher than the return from equities. Typically, investors evade these costs by executing zero cost option strategies, in which some of the potential upside in equities is given away via the sale of calls, the proceeds being used to finance the purchase of puts. However, because the positive return from equities is very unevenly distributed from year to year, such strategies drastically lower longer-run returns. This is because the excess positive returns in good years make up for lower returns in poor years. In addition, the popularity of such option overlay programmes is such that index puts are typically more expensive than the equivalent call. To illustrate this point, we calculated what UK equity returns would have been since 1899 had such a typical option protection strategy (out-the-money call sale – out-the-money put purchase for zero cost) would have returned. We assumed a constant implied-volatility skew, under which the sale of 7% OTM calls purchased the equivalent 10% OTM downside put protection. It is probably little surprise to find that the option-protection strategy almost completely eliminated the equity risk premium. While unprotected equities returned a geometric annual average of 5.2%, 1899-2005, the option-protected strategy delivered just 1.4%. Over the same period, gilts delivered 1.2% and cash returned 1%.

Figure 28: UK equity real returns, 1899-2005, with and without option protection programme

	Real UK equity return	Gilt real return	Equity risk premium
Naked	5.2	1.2	4
With zero cost option protection	1.4	1.2	0.2

Source: Barclays Capital.

Thus, history shows that the employment of the type of zero-cost option protection programmes that are currently very popular would reduce the realised equity risk premium from 4% to all of 0.2%. There are, ironically enough, effective ways to add volatility hedges to balanced portfolios through relative value trades. These make use of the mis-pricing of implied volatility caused by the popularity of simple risk-dampening strategies, such as the one described above. However, a detailed exposition of such trades lies outside the particular ambit of our study. The moral of this particular tale is that attempts to eliminate equity risk will also eliminate the equity risk premium. Equities outperform because their returns are more volatile than many other asset classes over the short run. Trying to hedge out these risks will hedge out the return as well; there is no such thing as a perpetually free lunch.

The analysis adds up to the basic point that the volatility of asset returns is actually the investor's friend, not their bane. For without volatility, there can be no excess return. Equity volatility can perhaps be more usefully described as an uneven distribution of returns over time, for which markets appear to provide an excessive compensation. The excessive compensation is a function of two factors. First, the markets seem to be inhibited from valuing equities on the basis of their less-volatile real returns, focusing rather on the irrelevant nominal return volatility. This is probably due to the phenomenon of money illusion, which is the human tendency to think in nominal, rather than real, terms. Second, our human reflexive panic response to signs of danger, inherited from our primate forbears, causes us to overreact to risks relative to rewards. Such monkey-panic pricing has been characteristic of forward-looking measures of the equity risk premium for the past three years. If history is any guide, the high ex ante equity risk premium is likely to deliver a higher-than-average realised equity risk premium in the years ahead. Meanwhile, attempts to curtail the volatility of equities by options hedging are likely to eliminate excess equity returns over time, suggesting that the investor would have been better off investing in other less volatile assets.

Of course it is highly improbable that investors – or their accountants and regulators – will ever embrace equity volatility as the prerequisite adjunct of equity returns. The holy grail of investment is always going to be the best risk/return trade-off and equity volatility is likely to remain an undesirable property for most investors. Our monkey nature is not going to be shed so easily. As we have shown, the surgical removal of equity volatility usually removes the equity return as well. The more efficacious approach is to diversify into other asset classes whose returns are both positive and uncorrelated with equities. However, the major caveat with this strategy is that it has to be complete: the choice of assets needs to be utterly unconstrained, shorting is required and the definition of "asset" widened to incorporate the totality of legal money-making activities. Moreover, the approach needs to be dynamic, since asset valuations – and their attendant prospective returns – are constantly shifting, as indeed do the correlations between various asset classes. An approach to securing a smoother risk-return portfolio allocation is the subject matter of the next chapters.

Chapter 3 – The return of diversification

Stuart Jarvis, Ugo Montrucchio, Javier Rodriguez

We examine how investors can make use of the increasingly wide range of markets and instruments available to build better portfolios.

The hard-learned lessons of the late 1990s and the growth of alternative investments have started to influence asset allocations, driving a renewed thirst for the efficient construction of portfolios that incorporate a diverse set of return sources.

The basic investment trade-off is between risk and return. The terminology of modern portfolio theory (and its extensions) enables this balance to be expressed mathematically and "optimal" strategies to be determined. The theory results in more precise statements of some old truisms and insights that are initially surprising. For example:

- **Diversification.** By bringing together assets that are imperfectly correlated, a better risk/reward trade-off can be obtained than was available from any single market in isolation.
- **Universal solution.** Given a set of expected returns and volatilities, assuming that volatility is the risk measure and that there are no constraints imposed upon the portfolio, the optimal mix of risky assets is the same for all investors. Investors construct a portfolio with their particular risk or return target by leveraging up or down, ie, holding an appropriate proportion of their fund in cash and the remainder in this risky asset mix.

This description of a universal solution breaks down in the presence of constraints, such as not allowing negative or short positions, as well as in the presence of liabilities (so that asset volatility is no longer the most relevant risk measure). However, constraints are becoming rarer as markets become increasingly adept at separating market returns and active returns.

The aggregation problem

In principle, the construction of an efficient trade-off between risk and return requires good estimates of these two factors for each asset class. However, these are tough problems from a statistical perspective and economic reasoning is required if investors are to narrow the ranges for these estimates. The capital asset pricing model (CAPM) casts a long shadow here; the idea of using a market-capitalisation weighted portfolio has a strong appeal. Yet we believe this portfolio, besides being difficult to construct, can be improved by using alternative lines of reasoning.

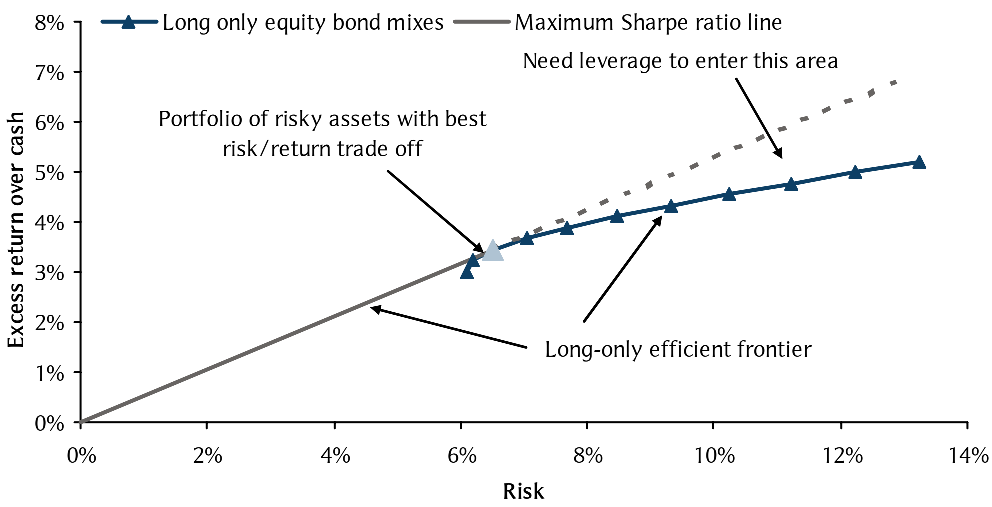
Measuring efficiency

In modern portfolio theory (due to Markowitz), risk is understood in terms of asset volatility (standard deviation). When portfolios are plotted on a risk/return chart, it is easy to see that for a given level of risk, the level of expected return is subject to an upper limit. That is, portfolios lie below a *frontier* made up of portfolios that represent the most efficient trade-off between risk and return. This upper limit is known as the efficient frontier.

The classic discussion of diversification begins with two assets. So long as they are not perfectly correlated, a mixture of the two assets will provide a better risk/return trade-off than at least one (and sometimes both) of the original assets. Note that it is not the highest return that is important when considering possible mixtures of assets, it is the risk/return trade-off. By leveraging the best mixture up or down, the trade-off is retained and a better portfolio is obtained for any return or risk level. Knowing the correlation, together with the risk/return characteristics of the original two assets, enables an optimal mix to be found. This means that the efficient frontier can be gradually approached by steadily mixing in different assets.

The range of combinations of two assets appears as a curve in risk/return space and when one asset has zero volatility (ie, the return is known in advance), this curve is simply a line. (Moving up and down this line is what we mean by leverage.) The slope of this line represents the risk-adjusted return for an asset, which is also known as the *Sharpe ratio*. If investors are freely able to go long and short in all asset classes, then the efficient frontier itself becomes a line in risk/return space. Finding any asset on this line is the goal of the "mean-variance optimising investor" – for them, an optimal portfolio with a given risk or return target can be produced by mixing with (possibly, borrowing) the risk-free asset.

Figure 29: Mean-variance optimising investors seek to maximise the Sharpe ratio – two asset example

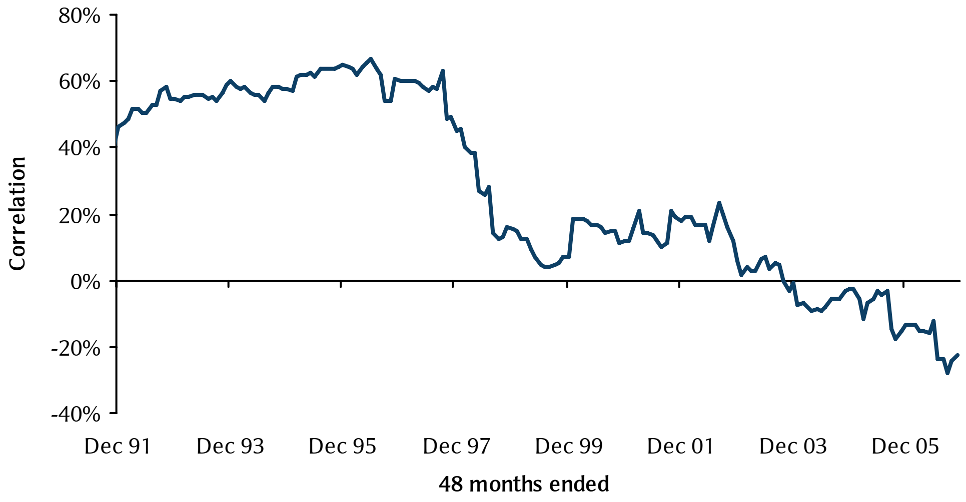


Source: Barclays Global Investors.

Parameter estimation issues

Therefore, the central problem in asset allocation is to estimate the range and relative likelihood of potential future returns. As described above, this typically amounts to estimating the mean and standard deviation of each individual asset or asset class and the correlations between them. Although this is far from straightforward, volatilities can be tolerably well estimated. In contrast, correlations are notoriously unstable – but this is partly due to the definition of correlation as a ratio of volatilities. Figure 30 illustrates this for UK equities and index-linked gilts, where the correlation averaged around 50% for the first half of the 1990s and has since fallen, with recent observations being negative.

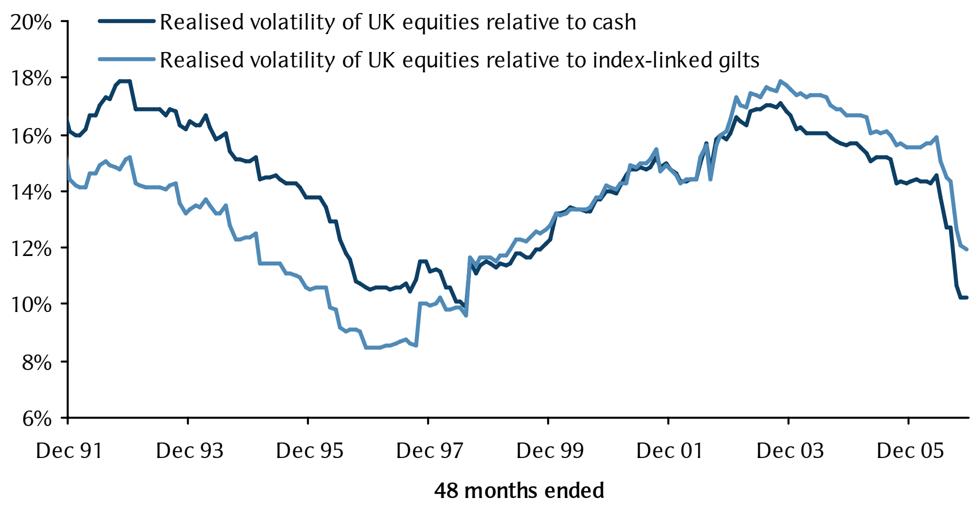
Figure 30: Realised 48-month correlation between UK equities and index-linked gilts



Source: Barclays Global Investors.

If the estimation problem is recast in terms of relative volatilities, then these are also reasonably stable through time and estimates can be made from historical returns. Figure 31 shows that UK equity volatility has remained 9-18% relative either to cash or index-linked gilts over the past 15 years, despite the dramatic fall in correlation.

Figure 31: Realised 48-month UK equity volatility relative to cash and index-linked gilts



Source: Barclays Global Investors.

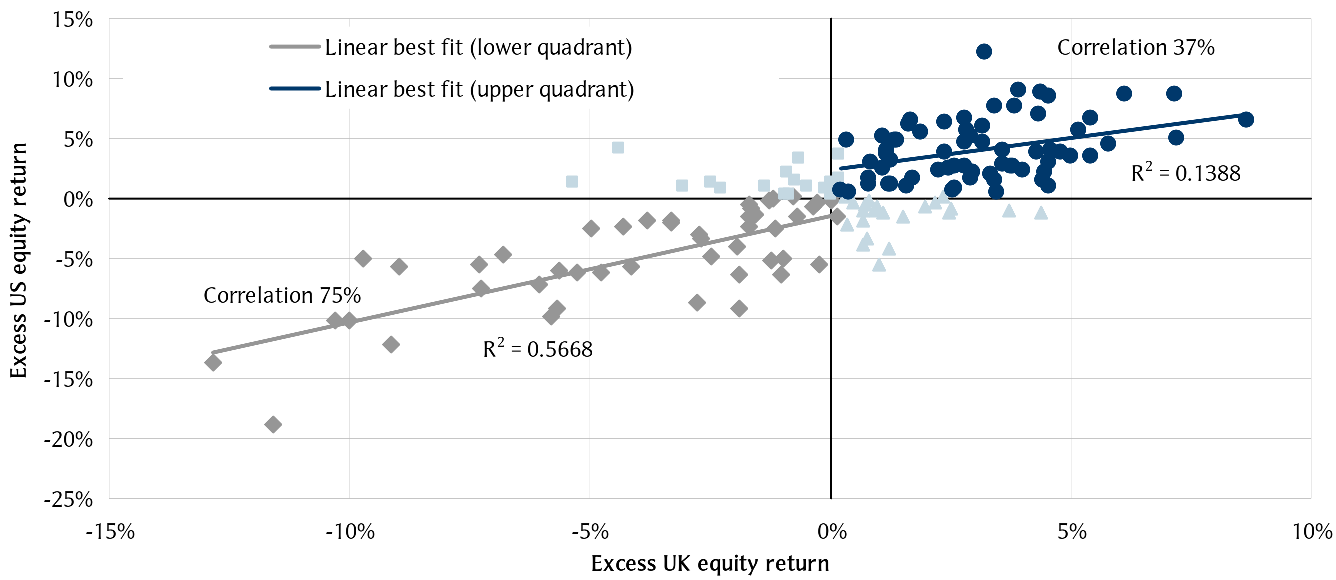
A significant line of attack on CAPM, indeed on the usual framework of modern portfolio theory, arises from the reality that investors do *not* have standard deviation as their measure of risk. Investors are much more concerned about *downside* risk, while being fairly ambivalent about potential *upside* risk. This has important implications for the approach taken to building a diversified portfolio.

Correlation can be a poor measure of dependency

We illustrated above how correlation can vary over time. However, even where the joint distribution of returns is stable, correlation may still not provide an appropriate measure of the dependency between two asset classes. This is especially the case when the focus is upon the risk of extreme events – known as "tail risk".

Figure 32 compares monthly returns in the UK and US equity markets since 1993, each from the perspective of a UK investor. The returns are split into four quadrants according to whether the UK and US returns are, respectively, above or below their averages. The upper right and bottom left quadrants would be roughly mirror images if the joint-normal-distribution assumptions implicit in much of modern portfolio theory held. This is manifestly not the case. When UK equity returns are good, the US returns tend to be good but there is a significant dispersion around the best-fit line (the R-squared is 13%) and the correlation is only 37%. Yet when returns in the UK are bad, there is a much stronger tendency for poor returns in the US – the R-squared jumps to 57% and we see a correlation of 75%.

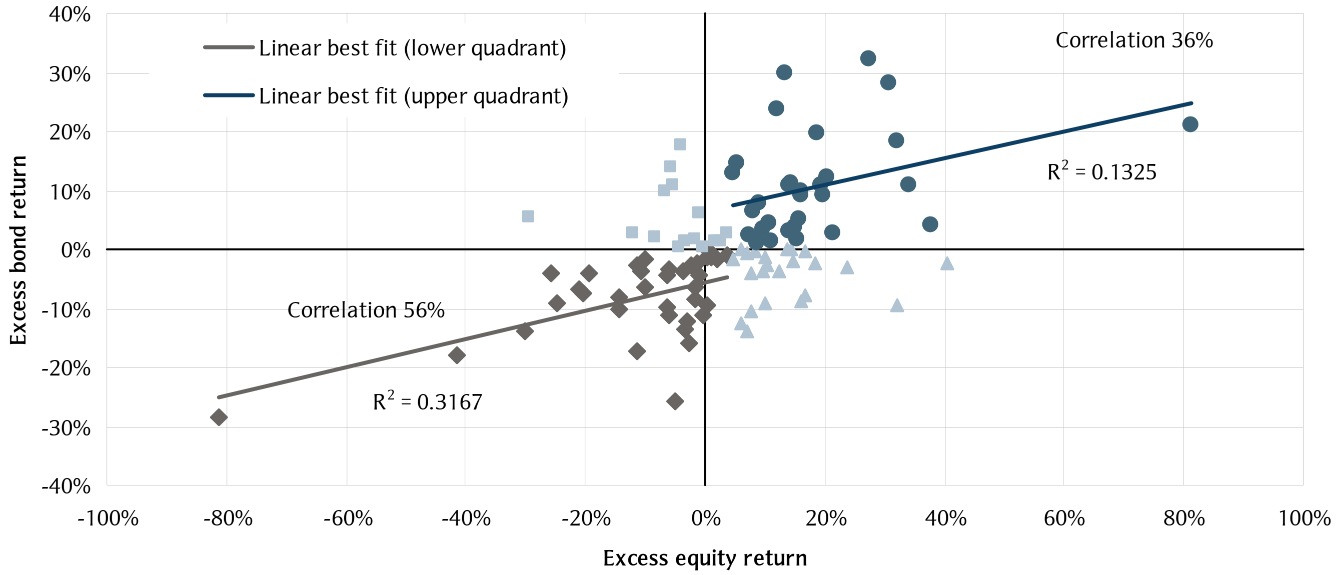
Figure 32: Correlation tends to increase in down markets: monthly UK and US equity returns from a UK investor perspective



Source: Barclays Global Investors.

Figure 33 shows the result of performing the same analysis on annual returns for UK bonds and UK equities since 1899. Again, higher correlation and less dispersion are exhibited in down markets.

Figure 33: Correlation tends to increase in down markets: annual equity and bond returns since 1899



Source: Barclays Capital, Barclays Global Investors.

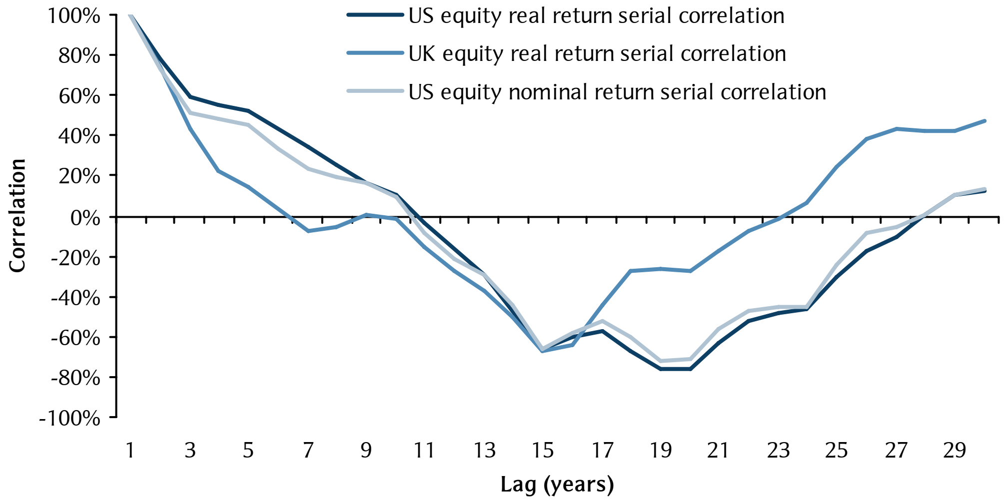
There is a choice. If the bad months and years can be taken on the chin, then it may make more sense to focus on the centre of the distribution. If the risk of the extremes is more keenly felt, then a different mix may be appropriate.

The different blend can take several forms. At its simplest, the portfolio should take into account the much stronger correlation in the tail. The more-focussed approach, however, is to use instruments that deal more explicitly with the tail risk while retaining some or all of the volatility in the middle of the distribution. This is indeed what some large investors do, while regulators have also helped to focus investors' minds.

Returns

We have seen that there are some problems using historical risks and correlations as a future predictor. However, with returns, history becomes a really poor guide. Realised returns are not at all stable, even if expected returns are – put another way, estimation error makes historical returns essentially useless. This subject was covered in last year's Equity Gilt Study (Chapter 2) and we have updated one of the graphs in Figure 34. This graph shows the serial correlation of US and UK equity real returns, over 15-year rolling periods, at progressively longer annual lags. The graph demonstrates that, after a 15-year lag, the real returns are negatively correlated to a significant degree.

Figure 34: Serial correlation, by annual lag, 15-year rolling real UK and US equity returns, UK from 1899, US from 1926

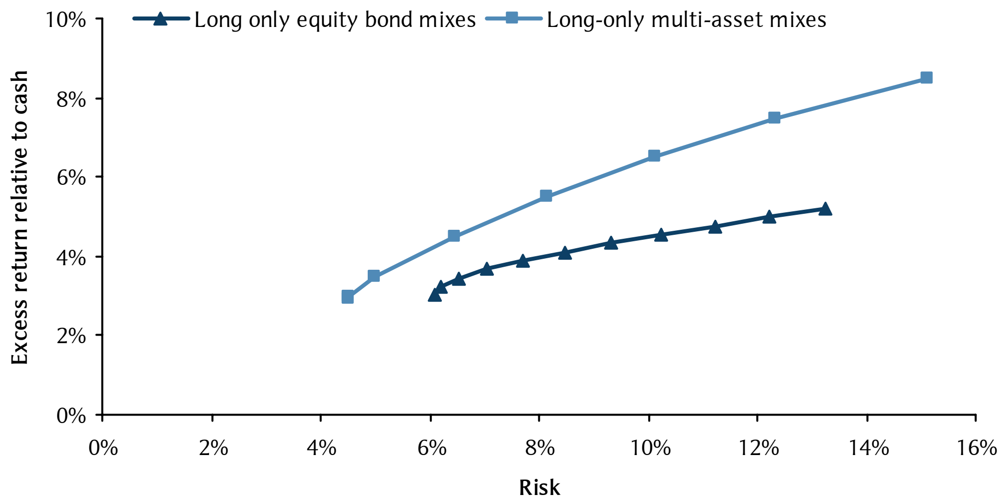


Source: Barclays Capital, Bloomberg.

In addition, small differences in return estimates can lead to very large changes in allocations. So some sensible economic theory is required.

This estimation process has been made more complex by the increasing range of asset classes, with private equity, property, commodities, infrastructure, high yield and emerging market debt becoming commonplace. However, it is well worth the effort – Figure 35 shows the effect of adding these asset classes on the efficient frontier.

Figure 35: Efficient frontier with multiple asset classes[2], compared with efficient frontier with equities and bonds only (Figure 29)



Source: Barclays Global Investors

The market-weighted portfolio

We have seen that including more asset classes helps, but also that historical returns do not help predict the future. So how can we go about predicting investment returns?

[2] *The asset classes included here are: developed equities and bonds, property, commodities, high yield bonds, infrastructure, emerging market equities and emerging market debt.*

In the CAPM, introduced by William Sharpe and others in the 1960s, finding an asset with this highest Sharpe ratio is easy, at least in theory: just invest in a market-weighted portfolio. One way to think about this is to notice that the optimal portfolio for all investors, whatever their return target, lies on the same line and so consists of the same mix of risky assets. So the aggregate portfolio – the market-cap portfolio – must also consist of this same mix and must be on the efficient frontier line.

Furthermore, the regression (beta) of any asset against the market portfolio provides an estimate of its expected return and a breakdown of the asset's risk into a systematic (rewarded) component and a specific (diversifiable) component. This insight into portfolio return dynamics is very powerful, even in the absence of a belief in the application of CAPM as a whole. Indeed, the decomposition of returns into multiple beta exposures – rather than the single market beta – is a surprisingly useful way to think about portfolio return dynamics.

Against the market

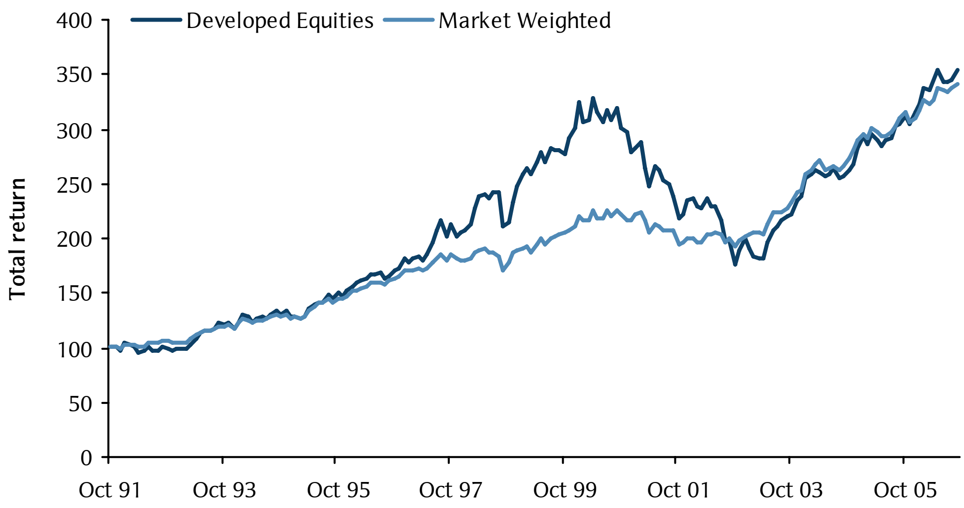
The theoretical and empirical objections to CAPM and/or the use of a market-weighted portfolio are manifold and their history is as long as CAPM itself. For example:

- **Liabilities.** As well as holding assets, investors have liabilities. It is only *after* taking account of these that the risk/return problem becomes similar. It is aggregate assets *less* aggregate liabilities that should be used, not just aggregate assets.
- **Investor constraints.** Investors also hold deliberately non-optimal portfolios, or investors may be optimising over an incomplete range of assets. For example, the costs of borrowing or legal restrictions may prevent some assets from being held, or data on some markets may not be readily available.
- **Unobservable.** The market portfolio is not readily observable – CAPM tends to be used in practice in reasonably well-defined markets (eg, the US equity market). The weights for most developed markets are relatively easy to assess, but what is the market capitalisation for commodities or inflation?
- **Centre versus tail risk.** Investors are not simply interested in the characteristics in the centre of the return distribution (where mean and variance focus their attention) but on the lower tail – how bad can things get? Risk measures such as Value at Risk are used by many and these have implications for the construction of a diversified portfolio.
- **Lack of equilibrium.** Visibly, investors are not holding the same mixes of risky assets so the mean-variance equilibrium has not been achieved. This is perhaps not too serious if individual investors are pursuing strategies to outperform their long-term benchmark – these differences from the benchmark should sum to zero as individuals trade against each other.

Despite these objections, the attraction of a market-weighted portfolio is very great. In practice, therefore, this portfolio should at least be used as an implicit benchmark against which to compare any other diversified construction.

We have compared this multi-asset "market" portfolio with an equity market portfolio in Figure 36. We can see that over many periods it produces a similar level of return with dramatically lower volatility. That is, as expected, it exhibits a higher Sharpe ratio than a pure equity strategy.

Figure 36: 15-year cumulative returns of global equities compared with a portfolio of risky assets[3] weighted by market capitalisation



Source: Barclays Global Investors.

Alternative approaches

However, while this might be a useful first step, there are ways to estimate expected returns that do not rely solely on market weights. For example:

- **Yields.** The yield on a bond index, or the price/earnings yield for an equity index, can be used to estimate the prospective return from investing in these asset classes. The current yield considerably narrows the range of returns.
- **Sharpe ratios.** Over long periods, risk-adjusted returns (Sharpe ratios) tend to be similar over all asset classes. It is unreasonable to expect one asset class to give a significantly higher risk-adjusted return than another over a significant period. As with yields, this serves to reduce the range of prospective returns.
- **Direct risk premium estimates.** The expected return can often be broken into components that can be separately estimated. For example, the return from commodity investment can be broken into the collateral return, the price return and the roll return. Ensuring that these components are consistent across asset classes again helps to reduce the range of possibilities. This use of risk premia also allows us to add returns that are not themselves asset classes (nor have a weight in CAPM). Examples include inflation, volatility and put options.
- **Multi-currency perspectives.** Risk and return assumptions for a sterling investor can be transformed into assumptions for a US dollar or euro investor – so the above techniques can be applied from each perspective.

[3] *Same assets as used for Figure 35. See separate footnote.*

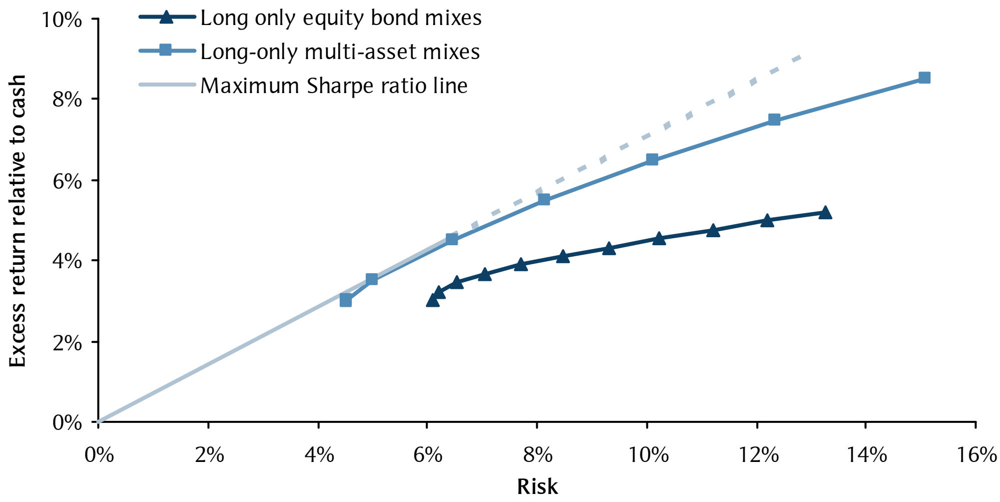
From assets to risk exposures

An efficient frontier is a function of three main inputs to the mean variance optimiser:

- The risk and return assumptions for the different asset classes.
- The liability profile of the investor.
- The constraints imposed upon the portfolio.

The effect of the constraints can be very great and is often underappreciated. As described above, in the absence of constraints a curved efficient frontier becomes a straight line. Yet the efficient frontier is curved for most investors and may be a long way below the unconstrained line. This is particularly the case for investors with long-term liabilities. In Figure 37, we have compared the efficient frontier that an investor who is constrained to traditional asset classes[4], long-only investing and no leverage can access with the unconstrained straight line "frontier".

Figure 37: Efficient frontier for long-only investors using traditional asset classes compared with unconstrained frontier



Source: Barclays Global Investors.

However, once the comfort of a market-weighted or peer-benchmarked portfolio is left behind, it can make more sense to build up a portfolio as a basket of risk exposures. We note that these risk exposures do not always come in handy, long-only asset-class buckets. For example, an exposure to inflation or to volatility might be achieved by going long one asset class and short another. Or, more directly, by using a derivative with implicit leverage – in these cases an inflation swap or a variance swap. As these examples show, the move from market weights is often accompanied by a view of a much wider range of investment classes that can be used to construct a diversified portfolio.

The increased separation of market returns (beta) and active returns (alpha), driven by increasing sophistication and a desire for transparency, is also turning what was once thought of as alpha into something that feels more like beta. Strategies such as value investing, investable hedge fund indices and the replication of carry trades in currency markets are recycling alpha strategies into new beta sources. This steady broadening of investment choices gives investors an increasingly hard aggregation problem. Rather than a small number of asset classes, there are numerous tilts within each of these asset classes. The number of "alternative" asset classes continues to grow.

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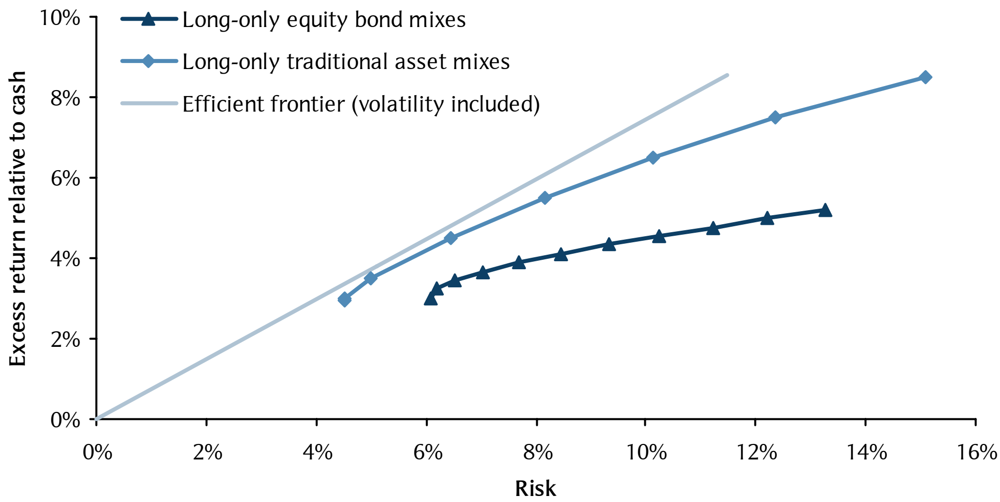
[4] The asset classes included here are the same as for Figure 35 above. See earlier footnote.

This market dynamic breeds demand for third parties (managers, banks etc.) to ladle diversified strategies from this ever-bubbling alpha-beta soup.

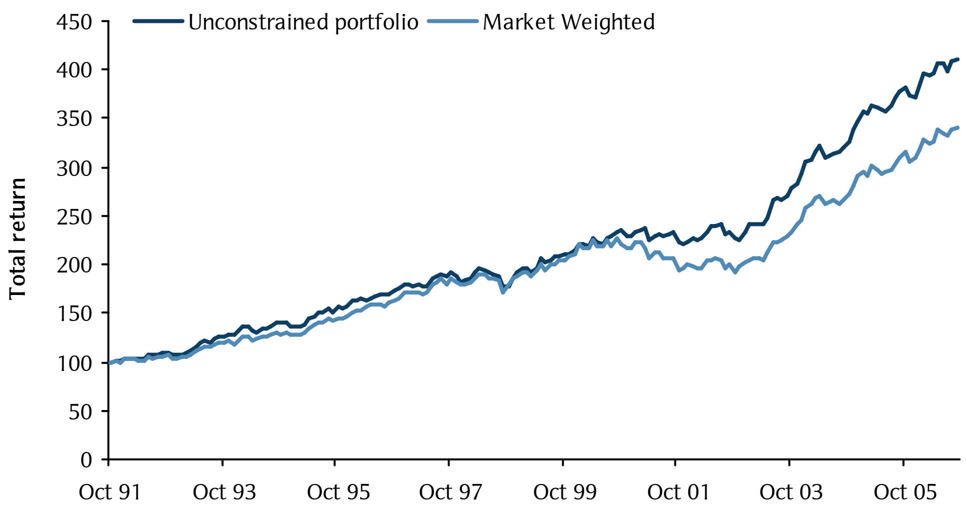
Figure 38 and Figure 39 show how we can improve our market capitalisation portfolio by using some of these insights to adjust portfolio weights, as well as by including risk exposures that are not adequately captured by asset classes.

Figure 38: Including alternative beta sources enables the prospective risk return trade-off to be improved. Volatility exposure added to traditional asset classes.



Source: Barclays Global Investors

Figure 39: 15-year cumulative returns of risk exposures[5] compared to market capitalisation weighting from Figure 36 above.



Source: Barclays Global Investors.

[5] *Mix is constructed on a monthly basis to maximise the prospective Sharpe ratio. See "alternative approaches" above for an overview of the method used to estimate prospective returns. Asset classes / risk exposures in this example: developed equities, world government bonds, property, high yield bonds, emerging market bonds, commodities, private equity index, infrastructure, hedge fund index and volatility index.*

Some key statistics for the return series illustrated in Figure 36 and Figure 39 are shown in the table below.

Figure 40: Statistical measures of historical time series

	Developed equities	Market weighted	Multi-asset
Annualised return	9.4%	8.5%	9.8%
Annualised volatility	13.3%	7.5%	6.9%
Realised Sharpe ratio	0.39	0.58	0.81
Lowest monthly return	-13.3%	-7.0%	-6.2%
Greatest monthly return	9.1%	5.7%	6.9%
Worst cumulative drawdown	-19.9%	-8.4%	-9.8%

Source: Barclays Global Investors.

It can be seen that moving into diversified portfolios and removing constraints steadily improves the key measures: volatility is reduced, the risk/return trade off improved and the worst monthly performance, while still large, is also reduced.

However, significant lower tail risk remains. The worst monthly return over this period was a fall of 6.2% and the worst cumulative fall was 9.8%. Therefore, the final step is for investors to explore ways to manage this tail risk more explicitly.

Options and structured products

It is an oddity of modern life that even as people become richer their appetite for protection seems to increase. In contrast, the strictly mean-variance optimising or utility-maximising investor should be more willing to take the rough with the smooth. Portfolio construction techniques must respond to this need by adapting the distribution of portfolio returns to reduce or remove the effect of the roughest patches.

So where do options have a role? Put options enable investors to add a floor, or a partial floor, under the value of their investments. Similarly, constant proportion portfolio insurance (CPPI) strategies and many other structured products can be used to deliver return profiles designed precisely to fit a particular need. The costs of these strategies could deter our theoretical mean-variance optimiser, but for an investor with strong tail risk aversion the benefits can potentially more than outweigh the costs.

In assessing these strategies, the Sharpe ratio becomes less relevant. Rather, an investor with strong downside risk aversion needs to invoke a measure of this risk other than variance. Value at Risk measures are suitable for these investors and comparisons can be made to determine the efficient risk/return trade-offs.

Thus, where regulatory pressure (e.g. solvency stress testing) and investor know-how coincide (eg, many large insurers) then these strategies are attractive.

Figure 41 shows how a CPPI strategy (with a protection level of 90% over 10 years) would have worked on our unconstrained diversified portfolio. We have made an allowance for additional costs of 1% a year. The strategy shows a smoother progression and gives the investor comfort that they would never have lost more than 10% of their initial capital.

Figure 41: Effect of CPPI on an unconstrained diversified portfolio.

	Multi-asset	Multi-asset with CPPI
Lowest monthly return	-6.2%	-5.6%
Worst cumulative drawdown	-9.8%	-9.0%

Source: Barclays Global Investors.

Conclusions

The rapid evolution of markets continues to improve the ability of investors to select only those risks where they wish to gain exposure. At the same time, investors are reawakening to the benefits of well diversified portfolios.

By removing unnecessary constraints on exposures and instruments, investors can dramatically increase the efficiency of their portfolios. CAPM can take investors a long way forward, and by thinking in terms of risk exposures and applying other research techniques to derive return forecasts, even better portfolios can be constructed.

Once the best mix of risk and return is achieved, the next stage is gain a more complete appreciation of the shape of the return distribution, particularly of the tail risks. This leads to the development and use of tools to explicitly manage these risks.

Hardly any of this is new. For example, the following investment advice on diversification dates not from the 1950s but from between 1.5 and 3 millennia ago:

It is advisable for one that he shall divide his money in three parts, one of which he shall invest in real estate, one of which in business, and the third part to remain always in his hands (as it may happen that he will need cash for a profitable transaction)[6]

Sadly, data on asset class returns in the ancient Babylonian empire seem to have been lost. Fortunately, data sources such as the Equity Gilt Study provide ample bedrock for determining advice for the coming millennia.

[6] *Talmud Balvi. Bava Metzia, Chapter 3 (http://www.sacred-texts.com/jud/t06/me104.htm).*

Chapter 4 – Send in the clones

Sree Kochugovindan

The case for hedge fund replication models has been heavily debated over the past year. Following poor hedge fund performance in the wake of the May 2006 equity market sell-off, there have been increased concerns over whether hedge fund returns were predominantly market dependent (beta driven) or due to manager skill (alpha generation). Recent academic research suggests that a large part of hedge fund returns are derived from common trading strategies or "alternative beta" factors. Numerous attempts have been made to replicate hedge fund returns and market commentators predict a proliferation of investable synthetic hedge fund products. These synthetics provide a cheaper alternative to the "2 and 20" fee structure often charged by hedge funds. However, they are also subject to much criticism. The main concern is that synthetic models will be unable to protect the investor from extreme downside risks, while a skilled manager may be more able to navigate the financial markets during turbulent periods.

We examine an alternative approach to producing synthetic hedge fund models, which may be better suited to dealing with asymmetric risk distributions or these extreme downside risks. Most synthetic hedge fund models are based on some method of replicating hedge fund returns based on key market strategies. We discuss a different approach and begin with a portfolio optimisation process that can be used to select the weights allocated to the assets in the investor's portfolio. We then incorporate technical analysis and fundamental models into the optimiser. By adding this extra layer of analysis, we provide a forward-looking view of the different asset classes, as well as a stop-loss mechanism to protect the portfolio when the markets are hit by extreme events.

The evolution of optimisers

Portfolio optimisation models can play an important role in the asset allocation decision process. However, investors may find that the results of standard mean variance optimisation models are difficult to interpret. These models tend to produce unrealistic and overly concentrated allocations, which are unsuitable for any practical investment decision. Criticisms of mean variance optimisation date back to the 1950s when Harry Markowitz first devised the technique. Markowitz emphasised the importance of the correlation between assets and summarised the basic investment objective of maximising expected portfolio return and minimising portfolio risk. Prior to this date, investment strategies involved analysing individual stocks without considering the effect on the overall portfolio performance. The Markowitz mean variance optimiser provided the foundation of modern portfolio theory. However, it did not provide a practical tool that could be easily used by investors.

The traditional mean variance approach suffers from a number of drawbacks. First, expected returns are required for all assets in the portfolio. Expected returns are inherently difficult to estimate and investors may not have a view on every single asset. Second, the investor may not have a view on the absolute level of the asset's return, but may have a relative return view instead. For example, the investor may wish to express the view that European equities may outperform US equities by X%. Furthermore, standard optimisation models have no way of distinguishing between strongly held views and those that are more general. Hence, the final weights may not truly represent the investor's views. Third, the final optimised weights are extremely sensitive to any changes in the expected returns and can result in highly unintuitive and overly concentrated allocations.

Portfolio optimisation techniques have evolved substantially over the past 50 years. The second generation of optimisers, such as the Black-Litterman model attempt to address these issues and provide a number of advantages over the standard Markowitz model.[7] Black-Litterman allows investors to express both relative and absolute views. It also allows the investor to express views on just a few assets. Finally, the model is able to incorporate the strength of the investor's views by assigning confidence levels to each expected return.

The Black-Litterman model uses "equilibrium" excess returns as a neutral reference point in the allocation process. These returns assume that supply and demand are in equilibrium and represent the market consensus view of future returns. If markets are in equilibrium, the average investor should be holding a portfolio which is allocated according to market capitalised weights. The final calculation is based on the market capitalised weights, the variance-covariance of the assets' returns and the coefficient of risk aversion. The coefficient of risk aversion is the risk-adjusted market premium of the assets. It is assumed that the market premium equals the historically observed excess returns. This approach is based on the capital asset pricing model (CAPM). Intuitively, the model expects prices to adjust until expected returns reach a level where the demand for assets equals the available supply. If the investor does not hold a precise view on every asset in the portfolio, then the equilibrium returns provide a neutral starting point from which the investor can express a relatively bullish or bearish view.

This initial "equilibrium" return distribution can then incorporate the investor's individual views. In the absence of any views on expected returns, the investor will hold a portfolio based upon the market capitalisation weights. Furthermore, the investor's level of uncertainty is expressed as a probability between 0% and 100%. Thus, the Black-Litterman model provides the key advantage of quantifying the investor's level of uncertainty and incorporating it into the optimisation process in a practical manner.

There are some key limitations to the Black-Litterman model. First, the equilibrium returns, which provide the neutral starting point, are based on historical data. So they are not forward-looking expectations and they may be biased by the time period over which they are computed. Second, the forward-looking component of the model is dependent on the investors' views and is therefore purely subjective.

The next step: Removing human judgement

The Black-Litterman model can be adapted in order to overcome some of these issues. It may be possible to incorporate fundamental models and technical analysis in order to formalise the investor views or expected returns. Investor views can be replaced with forecasts or trading signals for each underlying asset. This removes any element of human judgement from the optimisation process and takes into account forward-looking information as well. We consider two methods in order to gain a more comprehensive set of trading signals, econometric analysis based on macroeconomic trends and technical analysis.

Econometric models based on macroeconomic factors can be used to indicate whether an asset is fundamentally over or undervalued. The key macroeconomic trends can have a significant short-term and long-run impact on financial asset price trends. Business cycle indicators such as GDP and industrial production have historically had a heavy influence on market price action. More timely and forward-looking indications of

[7] *Black, Fischer, and Robert Litterman, "Asset Allocation: Combining Investor Views with Market Equilibrium", Goldman Sachs & Co. 1990.*

the business cycle can be found in some sentiment surveys. For example, in the US and Europe, the purchasing managers indices summarise the sentiment of businesses and their outlook on a number of issues, such as hiring intentions, new orders and price expectations. These indices can provide a leading indication over the future trends of a variety of asset prices from fixed income and commodities.

Technical analysis focuses on market price action and, primarily through the use of charts and historical patterns, can provide an early warning trading signal. In contrast to the econometric models discussed above, which capture the influence of macroeconomic trends, technical analysis helps to capture market psychology. Examples of indicators that can be used within the Black-Litterman model are stochastic oscillators and correlation indicators.

Stochastic oscillators are momentum indicators, which attempt to identify the asset price trend. During overbought or oversold situations, the oscillator will identify periods when the trend is running out of steam. This same concept can be applied to volatility instead of price. The volatility oscillator identifies the trend in volatility and ascertains whether the price is then trending up or down. It also considers whether the asset volatility is low enough to consider entering the investment. Oscillators can be combined with correlation indicators in order to validate the signal. Correlation spikes across asset classes can highlight overheated markets with lots of speculative flows. Correlation indicators can therefore indicate when to override the signal from the oscillators and the fundamental econometric models.

Although technical and fundamental analyses are often viewed as separate investment tools, combining the two can significantly improve the trading signal. Fundamental analysis can indicate whether an asset is undervalued, while the technical indicators can confirm the market direction and identify the best time to enter the trade. Combining these two models together can also provide a stop-loss mechanism.

The slippery concept of risk

In order to fine-tune the optimisation process, we need a reliable measure of risk. Value at risk (VaR) measures the risk exposure of the entire portfolio and provides a key tool for investors to compare risk across portfolios. Academic literature on methods for calculating VaR is vast and beyond the scope of this chapter. Recent literature concentrates on methods that attempt to provide a more realistic measure of risk, which account for extreme events in financial markets. Basic measures of VaR, which assume a normal distribution for asset returns, tend to underestimate the true VaR by ignoring extreme market movements. A variety of methods have been formulated that do not make assumptions over the return distributions and are more capable of accounting for fat-tailed distributions, or extreme negative returns.

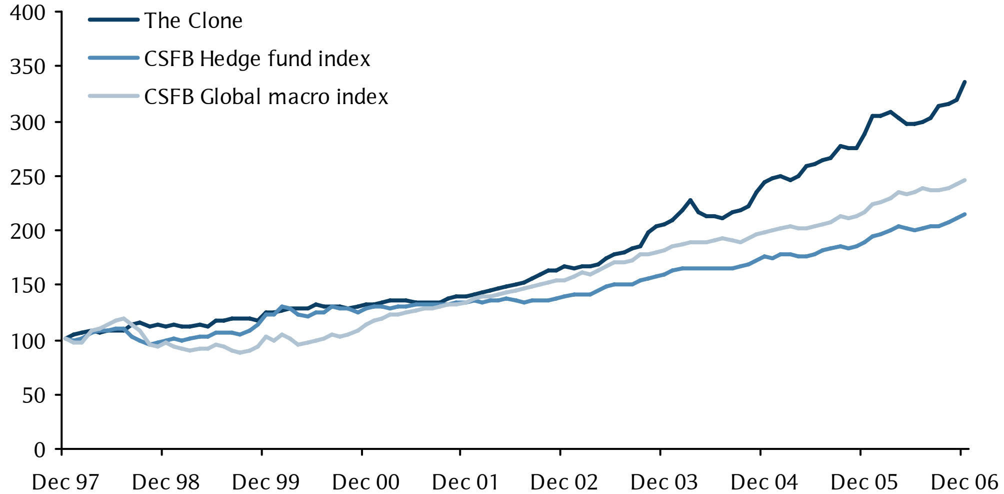
Incorporating VaR into the optimisation process allows the investor to maximise returns subject to a specified level of VaR instead of a level of variance. This ensures that the most efficient portfolio allocation is achieved and can provide a more practical way of tailoring the allocation to the individual investor’s level of risk aversion.

Comparing the clone with the original

In order to test these ideas, we build a model portfolio based on a few main assets, and then compare the performance against the returns generated by the hedge fund industry.

We build a portfolio of US, European, Japanese and emerging markets equities, European property, US and European bonds and finally, cash. We then optimise using the Black-Litterman method. We generate the expected returns each month from a combination of technical analysis, econometric models and consensus forecasts. Thus, at the end of each month, the models produce a set of weights which are purely objective and independent of any human judgement. Figure 42 plots the indexed returns of our model portfolio against the CSFB hedge fund index and the CSFB Global Macro hedge fund index. The hedge fund returns are quoted net of all fees. To be consistent, our model returns are also net of fees; we assume a typical "clone fee" of 1.5%. A summary of the returns are provided in Figure 43.

Figure 42: Monthly indexed returns since 1998



Source: EcoWin, Barclays Capital.

Figure 43: Summary of performance

	The clone	CSFB Hedge fund index	CSFB Global Macro Hedge fund index
Average monthly return	1.1%	0.7%	0.9%
Annualised return	14.4%	8.9%	10.5%
Annualised risk	6.4%	6.9%	8.7%
Risk free rate	3.40%	3.40%	3.40%
Sharpe ratio	1.71	0.80	0.81

Source: EcoWin, Barclays Capital.

At first glance, the model appears to perform remarkably well in comparison with the hedge funds. The average annualised return is 14% for the model, while the hedge fund strategies produce just 9-10%. The model also possesses a slightly lower level of volatility than the hedge funds, thus generating a higher Sharpe ratio. A significant part of this differential is due to the differences in fee structure. As mentioned earlier, the CSFB hedge fund indices require the manager to report returns net of all fees, which are typically 2% of assets under management and 20% of the returns generated. Consequently, over the long run, it is possible for the cheaper synthetic funds to outperform hedge funds. However, one of the main concerns with any synthetic model is the short-term risk. How well can the clone perform during periods of financial crisis?

Figure 44: Testing a few key dates

Key dates	The clone	CSFB Hedge fund index	CSFB Global Macro Hedge fund index
Aug 98	3.95%	-7.55%	-4.84%
Sep 98	1.85%	-2.31%	-5.12%
Feb 00	1.77%	6.49%	4.43%
Mar 00	1.39%	-2.12%	-2.45%
Sep 01	0.52%	-0.83%	1.17%
May 06	-1.95%	-1.30%	-0.60%
Jun 06	0.18%	-0.11%	0.44%

Source: EcoWin, Barclays Capital.

In order to test the short-run performance, we examine a few key dates where the financial market underwent a period of financial turmoil. Figure 44 compares the returns during the Russian and LTCM crisis, the dotcom crash, the terrorist attacks of 11 September 2001, and more recently, the sell-off seen in the summer of 2006.

In the case of the Russian and LTCM crisis, the model outperformed both the hedge fund indices. The model had taken an extremely conservative stance during those months and only held positions in European and US bonds. Consequently, the model was perfectly positioned to capture the flight to quality in the wake of the Russian default.

Turning to the dotcom crash, we examine just February and March in order to highlight the performance before and after the market peaked. The conservative nature of the model meant that it underperformed hedge funds during the equity bubble. During February 2000, the model maintained a substantial weighting in bonds. However, for this very reason, it was able to outperform hedge funds as the equity market turned.

The model also outperformed during the month of the September 11 terrorist attacks. This was mainly because the attacks took place during a longer-run equity market downtrend, so the model already had a heavy weighting in cash and bonds.

During the sharp equity market sell-off of May 2006, the model underperformed hedge funds, despite a heavy weighting in cash. The model recovered quite quickly, posting positive returns the following month. However, it still failed to outperform the Global Macro hedge funds.

Conclusion

In our view, there is no doubt that the top layer of talented hedge fund managers cannot be replaced by an automated mathematical tool. A skilled manager is able to select mispriced securities and protect portfolios against severe losses during periods of extreme events. Synthetic hedge fund models based on replicating key strategies may not be as versatile as a skilled manager in reacting to turbulent financial conditions. However, average hedge fund returns as captured by indices are not necessarily as spectacular as the average fee structure should warrant.

However, by adding extra layers of analysis to a Black-Litterman optimisation process, it may be possible to overcome some of the key drawbacks of standard hedge fund cloning methods. Models based on fundamental or macroeconomic trends can help identify assets that are over or undervalued. While technical analysis can help confirm these trends and also provide a stop-loss mechanism, which can protect the overall portfolio performance. Optimising with respect to VaR provides a more practical way of incorporating the investor's individual level of risk aversion. These extra layers of analysis may to some extent mimic the decision-making process of the average hedge fund manager… at a fraction of the cost.

Chapter 5 – The state that I am in…

Moyeen Islam

It has been 10 years since the introduction of the short-lived Minimum Funding Requirement and the abolition of Advanced Corporation Tax relief. Since then, the "pensions crisis" has rarely been far from the headlines. It has prompted a comprehensive overhaul of the regulatory framework and changes to accounting regulations in an attempt to shed some light on the "black hole" at the heart of corporate balance sheets. However, over the past 10 years, there has only been a glacial shift in fund asset allocation with better-funded schemes more likely to hold additional fixed income assets. The growth of liability-driven investment (LDI) strategies has increased the use of equity and fixed income derivatives to help manage exposure to both equity and interest rate risk by the construction of hedging portfolios. We believe this trend will likely continue with transition flow, driven as much by corporate actions and market levels as regulatory and accounting pressure.

Happy birthday!

This year will mark the tenth anniversary of the Minimum Funding Requirement (MFR), which first introduced marked-to-market valuations of assets and liabilities and a market-based discount rate for liabilities. If this was not enough cause for celebration, July will also mark the tenth anniversary of the abolition of Advanced Corporation Tax relief, which had previously provided a tax efficient reason for pension schemes to hold UK equity. It has been independently estimated that the removal of this credit has been worth £100bn over the past 10 years.

In the intervening period, there have been several rainforests worth of paper devoted to the "crisis" in occupation pension schemes. Proposed solutions have ranged from calls for the government to issue £100bn of ultra-long dated debt to recapitalise failing schemes to changes in regulations and the retirement age – the list of options and solutions seems almost infinite. We have also seen the government comprehensively reform the framework for regulating pensions and introduce both a new regulator and an industry-wide discontinuance fund.

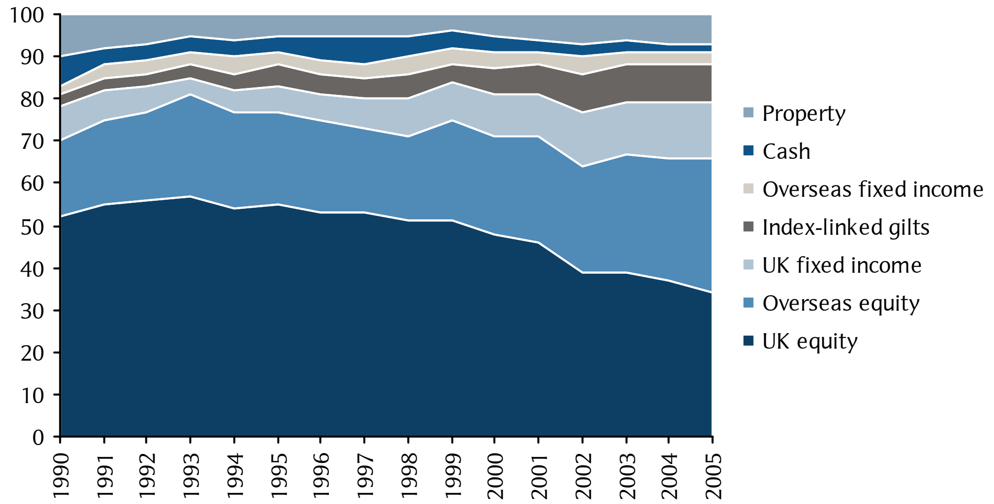
Additionally, as the government's borrowing requirement has risen, the UK Debt Management Office has deliberately skewed issuance to the longer end of the curve – although this also fits with their objective to raise financing for the government at the lowest cost possible. The accountancy profession has done its bit by reviewing the guidelines that govern the accounting treatment for retirement benefits. And if all this was not enough, the market for long-dated nominal and inflation derivatives has developed rapidly in an attempt to offer pension fund managers the types of instruments that can help in liability matching. The move towards asset and liability management (ALM) has given rise to the growth of liability-driven investment (LDI) strategies deigned to provide hedging of interest rate and equity market risk.

It is beyond the scope of this article to examine the case for and against LDI – we leave that issue for others to explore. However, this would seem like an opportune moment to assess how far the UK pension industry come over the past 10 years and what might lie ahead.

Asset allocation: a glacial process

Figure 45 outlines the broad asset allocation for UK pension funds since 1990. What is apparent is that, after all the discussion of wholesale shifts from equity to fixed income, total investments in these two broad asset classes have shown a discernible but overall glacial shift. Total equity (overseas and domestic) holdings as a proportion of the aggregate investment have fallen from 70% to 64% while total fixed income investment has risen from 11% to 25%. So there would, at first glance, seem to be some evidence of the beginnings of a shift from equity into fixed income. However, the official data have an obvious weakness: nowhere do they directly pick up the increased use of derivative instruments by asset managers as an investment strategy to hedge liabilities. Consequently, the flow data does not fully capture the true outright industry exposure to fixed income or equity as an asset class.

Figure 45: UK pension funds asset allocation 1990-2005 (%)

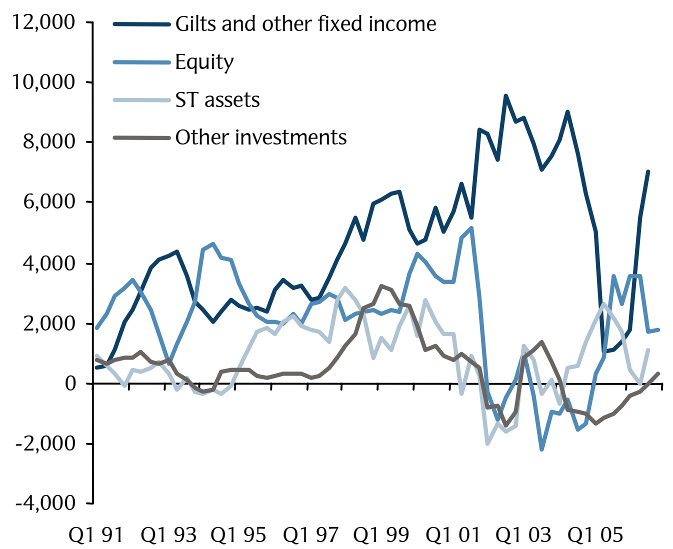


Source: National Statistics, Barclays Capital.

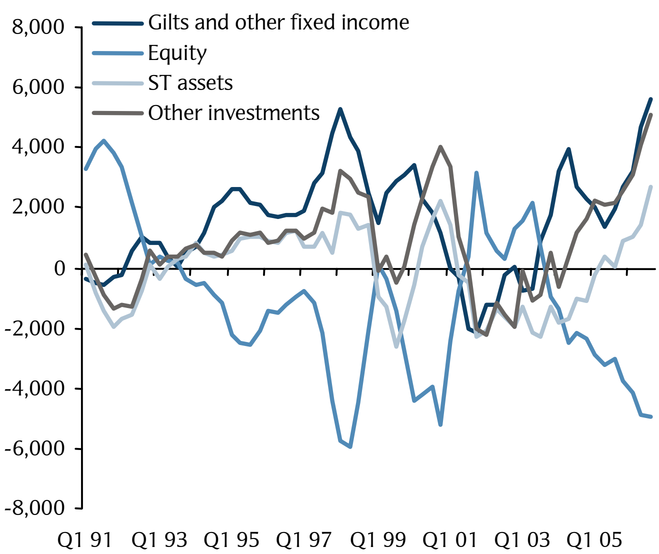
However, a closer look at the quarterly flow data from National Statistics shows a somewhat more complex story. Figure 46 shows the flow data from long-term insurance funds and pensions schemes over the past 10 years:

Figure 46: Institutional investment flows (4QMA, £ mn)

Long-term insurance fund flows



Pension fund flows



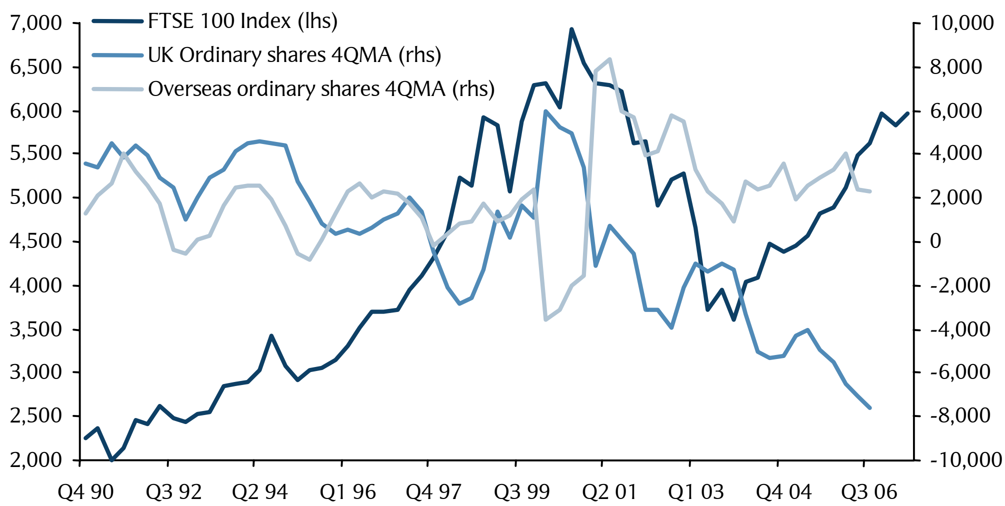
Source: National Statistics, Barclays Capital.

The flow data show some interesting contrasts. For most of the 1990s, the insurance sector showed good appetite for corporate fixed income and UK equity. But as they were confronted by a tightening of their regulatory capital framework by the FSA, insurers sold their holdings of corporate paper and equity and increased their holdings of gilts. This buying was largely in the belly of the curve, as this provided an effective hedge for insurance liabilities. After the abatement of these one-off structural flows, net gilt flow seemed to fall away but most recently, they have begun to show more of an interest in gilts. We think that this reigniting of interest has been driven largely by the effect of insurance regulation, specifically the initial calculations of Individual Capital Adequacy statements (ICAs) under the FSA new insurance regulation framework.

The story for pension funds has been slightly different. Since the mid-1990s, the sector in aggregate has been a net seller of UK equity while the appetite for corporate bonds has been relatively limited. What has been most notable is the ongoing interest in overseas equity and the jump in investment in what the ONS classify as "other investments". This includes investment in alternative asset classes, hedge funds, fund of funds and other "alpha-seeking" investments. Intriguingly, their appetite for gilts has only very recently picked up. So the flow data suggest that while institutional investors have been selling equity, their appetite for fixed income has been relatively subdued.

What has been apparent when looking at equity flows specifically is that the heavy selling of UK equity coincided with the bear market for equity during 2000-03. However, even as the equity market has recovered, there has been no desire to rebuild equity portfolios and indeed the selling flow seems to have accelerated. However, there has been some ongoing appetite for overseas equity from institutional investors indicating some desire to diversify portfolios away from UK-centric bias

Figure 47: FTSE100 Index vs institutional equity flows (4QMA, £ mn)



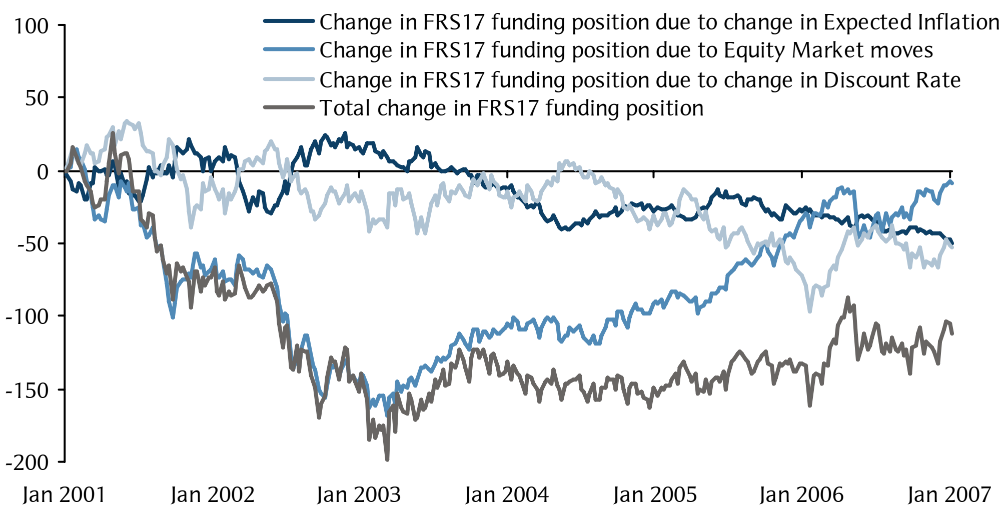
Source: Bloomberg, National Statistics, Barclays Capital calculations.

Scheme funding: immovable object?

The most recent official data from the "Purple Book" ("DB Pension Universe Risk Profile", published jointly by The Pension Regulator and the Pension Protection Fund), suggests as schemes become closer to being fully funded, so does the tendency to increase holdings of gilts and fixed income securities. Intuitively, this makes sense as there is a general reluctance to "lock in" deficits by executing equity-into-bond switches. This suggests that the appetite to begin to move down the LDI path is ultimately a function of the overall funding position of the scheme.

So just how has overall scheme funding evolved over the last few years? Figure 48 will be familiar to regular readers of our research. It shows how the aggregate deficit for a typical corporate deferred benefit (DB) scheme has evolved since 2001 and further, it breaks down the deficit into its key drivers – the nominal discount rate, the cost of inflation protection and the performance of the equity portfolio. The scheme modelled is assumed to have a starting point of £0.5bn liability in present value terms (measured on an FRS17 basis) and £0.4bn of assets by market value – ie, was 80% funded on an FRS17 basis, around 60% funded on a full buyout basis. In terms of assets, the scheme is assumed to holding the following asset mix: 70% equity (split evenly between UK and overseas); 30% bonds (25% of which are invested in index-linked gilts). Overall, we assume that the membership of the scheme has 25% active; 40% pensioner, with 35% deferred. Broadly speaking, this mirrors both the asset allocation and structure of a typical UK scheme at the beginning of the decade.

Figure 48: Evolution of the FRS17 deficit for typical UK-defined benefit scheme (£ mn)



Source: Barclays Capital Pensions Solutions Group.

What is immediately apparent from Figure 48 is the asymmetric relationship between the performance of the equity portion of the investment portfolio and the overall deficit. In the early part of the decade, the bear market in equity drove the funding level to its nadir in early 2003. However since then, as equity has recovered, the overall funding level has not come back with it. In fact by the end of 2006, the losses on equity from the early part of the decade have been largely erased. Rather the deficit is far more driven by movements in rate markets – specifically, the movements in the discount rate and the cost of inflation protection.

The overall funding position for a typical scheme now looks to be at levels that we briefly saw in mid 2006 but prior to that, the overall funding position is at its best levels in over five years. If, as the Purple Book suggests, that higher scheme funding is a pre-cursor to more fixed income investment then, all other things being equal, should we expect demand to pick up? Figure 49 outlines the latest estimates for deficits across the spectrum of deficit measures.

Figure 49: Overall UK DB funding levels (£ bn)

	S179/PPF deficit	FRS17	Full buyout
Total assets	635.5	635.5	635.5
Total liabilities	669.2	724	1075.8
Aggregate deficit	-33.8	-88.6	-440.4
Total deficit for schemes in deficit	-76..3	-110.6	-440.6
Total surpluses for schemes in surplus	42.6	22.1	0.3

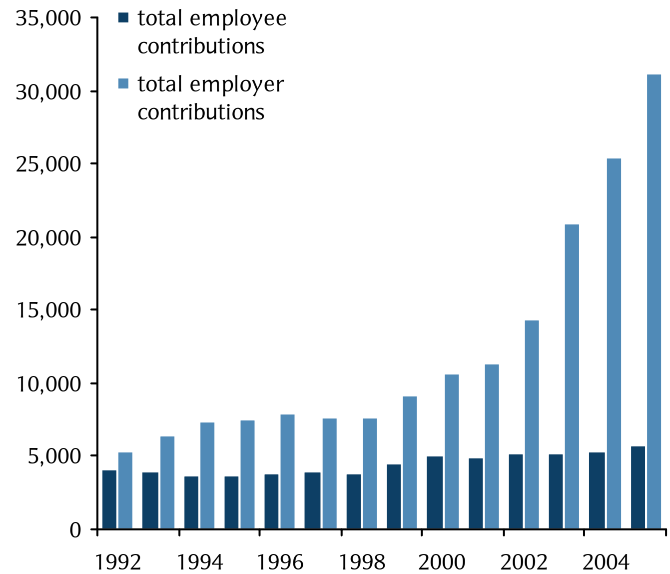
Source: TPR/PPF.

As can be seen, the overall funding position is a volatile item, so we need to look at the sensitivities of the deficits to movements in some of the key drivers. The Purple Book estimates that for a 10 bp move in gilt yields, the aggregate deficit would move by around £13bn, while a 2.5% move in equity prices would move the overall deficit by £11bn. These numbers need to be treated with a degree of caution, as the indexation treatment for PPF benefits does differ. Briefly, the PPF guarantee all pension in payment in full but pensions yet to be paid are only paid up to 90% relative to a compensation cap of £26,050 pa. Also, since the PPF pays no indexation on pre-1997 benefits, the s179 valuation are, in all likelihood, on the optimistic size. In contrast, the estimates for the full buyout deficit are likely to underestimate the true cost as the market for bulk purchase annuities, despite a spate of recent entrants, still has limited capacity and so the “cost” of the buyout is essentially a moving target. Typically, the full buyout cost for a scheme will be around 140% of its accounting (IAS19/FRS17) deficit.

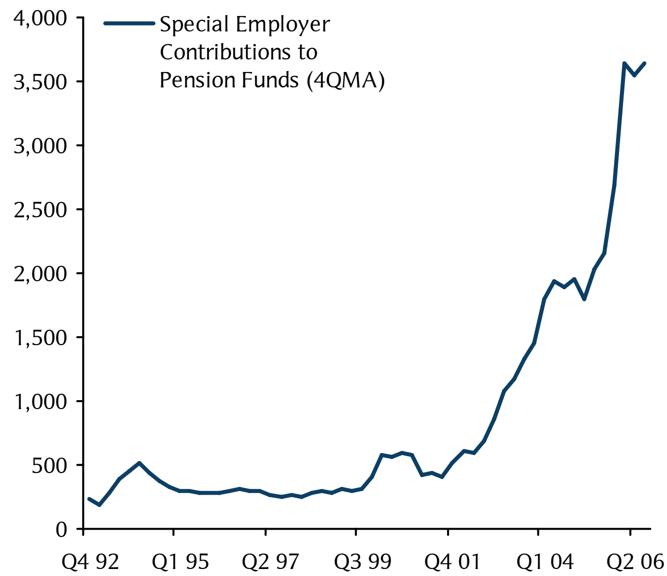
Figure 50 shows that employer contributions into pension schemes have been accelerating since the early part of this decade as the level of underfunding in corporate schemes has become apparent.

Figure 50: Contribution to pension schemes from employers and employees (£ mn)

Total contributions to pension funds (£ mn)



Special employer contributions to pension funds (£ mn)



Source: National Statistics.

This has largely been driven by one-off “special contributions”, which have grown from £1bn in 2000 to £10.8bn in the last full year of data (2005). In total, “special contributions” made up 30% of total employer contributions. Notably, special contributions have been on an accelerating path, with the four-quarter moving average currently running at just under £3.5bn per quarter, having recently fallen back a touch from its highest level in over 10 years.

LDI flow: It’s the longevity that kills you

The growth of LDI flow has been offered as a solution to pension deficits. In simple terms, the argument is that pension liabilities are bond-like in their nature and so by constructing a matching portfolio using a combination of inflation-linked and nominal cash flows, investors can hedge their liabilities effectively. It provides a direct link between the portfolio of assets and the liabilities for which the assets are being held.

Despite the increasing importance of LDI flows, data on how much has actually been done are next to impossible to find. While it is universally accepted that LDI flow is playing an increasing role in pension fund strategies, the increased use of derivative products is not being picked up in the official data produced by National Statistics. Previously, a useful gauge of activity was the amount of turnover in the inter-dealer broker market. But in all likelihood, this number probably underestimates the amount of flow that is seen in the market as, increasingly, inflation flow is being sourced internally not from the market but from specific sources such as debt issues from utilities. We would estimate that currently, LDI flow runs at somewhere around £20bn-25bn per year and is likely to run at this kind of level. Our own estimates suggest that in 2006, assuming an average duration of 20 years, the swap market saw £45-50m PV01 in LDI flow.

What LDI strategies cannot control is the risk associated with increasing longevity. The announcement that WHSmith had closed its scheme to new members illustrates the point. The company had moved its pension scheme over to a LDI-based portfolio but found that even after this, the increasing costs of longevity were making the scheme too expensive and no longer a “reasonable risk”. The risk and extra cost associated with longevity should not be underestimated. In their sensitively analysis presented in the Purple Book, TPR finds that a one-year error in longevity assumptions would change the aggregate deficit for the pension industry by £20bn at the three-year horizon. According to actuarial consultants Lane Cark and Peacock, of the 37 FTSE 100 companies that disclosed their mortality assumptions, the range of assumptions disclosed could vary the aggregate deficit of the FTSE100 companies by as much as £40bn. Also, the introduction of new mortality tables by the actuarial profession should have the effect of increasing the deficit, all other things being equal. Ultimately, longevity cannot be controlled, as there are no natural sellers of longevity. It has been suggested that the government is a natural seller, but it is, of course, exposed to longevity risk via the state pension system. Initial efforts to create a market in longevity via the issuance of longevity bonds have proved unsuccessful so far.

Corporate activity: the irresistible force behind future flow?

Most recently, the other key driver of LDI flow has been corporate activity. The merger or takeover of a UK company might potentially involve negotiations with the Pension Regulator on how the target company’s pension scheme is being insulated in the face of a highly leveraged takeover. The influence of TPR under such circumstances cannot and should not be underestimated. The Pensions Act grants a host of powers to the regulatory authorities, including ultimately the ability to invest directly into the pension scheme if it determines that it requires bolstering. It would not instruct on asset allocation, but we would assume that any such investment would ultimately find its way into LDI-type portfolios. Recent examples include the BAA/Ferrovial transaction, where BAA announced that it had sold £580mm of exchange futures to reduce its equity exposure and bought £720mm of inflation and nominal swaps to hedge its market risk. Overall, the transaction had the effect of the £2.1bn pension scheme moving from a 70/30 equity/bond weighting to a net exposure of nearer 40/60 without having to sell any of its underlying assets. We believe these transactions will continue as long as UK corporations remain interesting targets for acquisitions.

This is especially the case for utilities that have stable business models and steady non-cyclical cash flows. Many companies also remain subject to price controls, set by their industry regulator, as many of these companies, particularly network utilities effectively operate natural monopolies where the cost of entering the markets remains prohibitively high. With regulation for some sectors still in some form of RPI cap, these companies are natural issuers of long-dated inflation-linked paper (as was seen in 2006). Additionally, the stability of the business model makes such companies attractive to a private equity bid or leveraged buyout. The added attraction to potential buyout would be that the debt obligations could be funded cheaply in the inflation-linked market as the demand for long-dated inflation-linked paper clearly exists.

Third-party buyouts to the rescue?

One of the most interesting recent developments has been a steady stream of announcements from new players announcing their intention to enter the pension buyout industry – the bulk purchase annuity (BPA) market. Essentially, these new players are third parties, backed by investor capital, that are looking to take on the pension liabilities of corporate entities and manage them independently.

What has motivated the growth of this sector? Partly, it must be a belief that the equity risk premium – the traditional way that pension schemes make money – is not being realised as funds, under advice from the actuarial profession and under pressure from the regulatory authorities, look to build liability hedging portfolios in order to begin to mitigate the risk to the corporate sponsor. Latterly, the growing problem of longevity risk and the headache of having an open-ended liability on the balance sheet will have made corporate sponsors think long and hard about the future of their DB pension scheme.

In the opaque world of the UK pensions industry, traditionally, transfer of obligations to a third party has involved the purchase of a bulk annuity by the scheme in order to meet all the obligations in full. Legally, a solvent corporate entity that wishes to wind up a scheme must meet all its pension obligations, both deferred and active, in this way.

The purchase of the bulk annuity involves the valuation of pension liabilities – these are generally assumed to be discounted at a gilt rate using the most conservative assumptions available for key risks such as mortality, longevity and inflation. Given the size and complexity of this process and the risk involved in the ongoing management of the liabilities, only a very small number of players have felt able to manage these risks and this has led to the perception, rightly or wrongly, that the liability market is oligopolistic in structure and that has left the cost of a pension scheme buyout at an artificially high level.

The attractions to the corporate of handing over the liability to be managed by a third party are obvious. It allows full immunisation of a large and volatile balance sheet item. Also by divesting itself of pension obligations, it frees up valuable capital that can be used to fund investment. Indeed, the increase in pension contributions has been floated by the Bank of England as a possible underlying reason for the relatively subdued levels of business investment that have recently been seen in the UK. We should acknowledge that it is a myth to think that pension contributions disappear into a "black hole" as some might believe – that is simply not the case. Money invested into the pension schemes is generally used to buy financial assets in order to meet pension obligations and these assets can be debt or equity securities issued to finance investment.

Figure 51 outlines some of the new names that have announced that they will be looking to enter the market in 2007. Where available, we have also added the size of the liabilities that they have said that they can take on and any further comments on investment strategy and who their main backers are.

Figure 51: New and existing players in the BPA market

Existing Players	Comments	
Prudential	Written 3 of the largest ever, 2 worth >£500mn	Over 400 schemes currently
L&G	Smallest £3mn, largest £87mn	
Canada Life	Already acquired £6bn of annuity liabilities	
New Entrants	**Potential capacity**	**Scheme details and backers**
Aviva	Scheme sizes up to £150m	Started quoting in 2006
Aegon	Schemes sizes £50mn-200mn	Started quoting in 2006
AIG	Few details available	Started quoting in 2006
Pearl Group	Could consider entering BPA market	Backed by Sun and TDR Capital, up to £7bn capital
Paternoster	£5bn liabilities	Backed by Deutsche Bank, Eton Park, £500m capital
Synesis	£7bn-10bn liabilities over medium term	Backed by JPM, RBS and Warburg Pincus
Pension Insurance Corporation	£10bn-20bn liabilities	Backed by Swiss Re, Duke Street

Source: Company-specific information, Barclays Capital.

Judging from the numbers that we have collected for a variety of sources, most of the new entrants seem to focus on benefits that they can offer above and beyond pricing, including greater risk management skills, streamlined administrative process and greater flexibility. The latter includes the potential to offer staggered or partial risk transfer. Estimates for the size of the potential business differ greatly, but numbers in the region of £10bn pa have been commonly cited.

While there would seem to be a willingness on the part of the new entrants to come into the market and willingness on the part of the corporate to hand over the deficits to third parties, will TPR sanction such transfers? The transfer of a pension liability to a third party is a "notifiable event" as it involves a material change to the trustee employer covenant. As such, it requires the acquiescence (at the very least) of TPR.

The initial soundings from TPR are not wholly encouraging. On 9 October 2006, David Norgorve, TPR Chairman issued a warning statement on the "*abandonment* of pension liabilities" (our italics), while welcoming the innovation in the approach to the management of pension liabilities, the statement recognised that the primary purpose of such transactions was to allow the corporate sponsor the chance to avoid meeting its pension obligations in full. The most relevant part of the statement is reproduced below:

> "While we generally welcome innovation that helps employers and trustees manage risks better, we do not consider that abandonment of a scheme by its employers is usually likely to be in the best interests of scheme members unless the full section 75 debt is paid. Our position remains that the best means of delivering pension scheme members' benefits is for the scheme to have the continued support of a viable employer. Trustees should be able to secure innovation and improvement in the areas of

administration and investment without breaking the link with the employer. Therefore, promises of access to such better services are not seen as relevant factors for trustees to consider in making decisions on transactions that break the link with the employer…

… trustees should apply an extremely high level of scrutiny to any such proposals brought to them. Their starting presumption should be that it is unlikely to be in the best interests of members to break the link with an employer of substance unless the full section 75 debt is paid. Once the link to any employer is removed trustees will have lost an important backstop to protect scheme members if the pension fund runs into difficulties in the future."

(Abandonment of pension liabilities, Statement from David Norgrove, 9 October 2006)

More recently, TPR has published a discussion paper on the issue, "Abandonment of defined benefit pension schemes" [8] on 14 December 2006. The tone of the discussion paper draws from David Norgrove's statement. Of particular relevant is TPR's view that the current pension regulatory framework rests on two distinct pillars: funding targets levels combined with the employer covenant forms the basis of security for defined benefit schemes. A removal of the employer covenant should "…substantially increase the scheme's appropriate level of technical provisions, and they [the trustees] should reflect this potential change in negotiations and mitigation they seek" (p.4). This seems to be TPR's way of saying that a decision to divest liabilities would require a substantive increase in funding to reflect the loss of optionality that comes from having a strong employer behind the scheme. Further on in the paper, on the specific issue of scheme investment strategy, TPR goes on to state that:

"Following the reduction in or removal of the employer covenant, the scheme would have lost an important backstop to protect it against investment risks. It is expected that the investment strategy should reflect the increased exposure of the scheme and the limited protection that it has against these risks. This will interact with any mitigation provided to the scheme as part of the arrangement and the need to consider the technical provisions. It may be that the appropriate investment strategy with a nominal employer prevents the opportunity to achieve the funding of the appropriate technical provisions. This would be a strong argument for trustees not agreeing to the arrangement."

(pp 37-38, Abandonment of defined benefit pension schemes , TPR Discussion Paper, 14 December 2006)

It would seem that, currently, TPR is likely to insist that any transfer of liabilities is backed up by a risk mitigating investment policy that is reflected in any new scheme funding plan or any investment programme. So overall, if the market takes off, we should expect that there should be steady stream of LDI flows into the long end as schemes seek to satisfy TPR's insistence on risk mitigating strategies.

Will the regulatory capital framework influence the investment behaviour of buyout players who had taken on liabilities? We would argue that it would but not in a direct manner. A cursory glance at the latest available set of annuity fund returns for the largest providers show that typically, annuity funds hold 4-9% of their total asset base in regulatory capital. The reason that so little capital is devoted to regulatory capital is largely because most of their asset base is fixed-income orientated. Typically, they will hold around 70% of all assets in fixed income and very little in equity. Given that under the Pillar 2 test of the regulatory framework, a new annuity fund might look to run their balance sheets more efficiently and in order to minimise its ICA charge will look to divest itself of

[8] *The discussion paper can be found on The Pension Regulator website at: http://www.thepensionsregulator.gov.uk/pdf/AbandonmentDiscussionPaper.pdf*

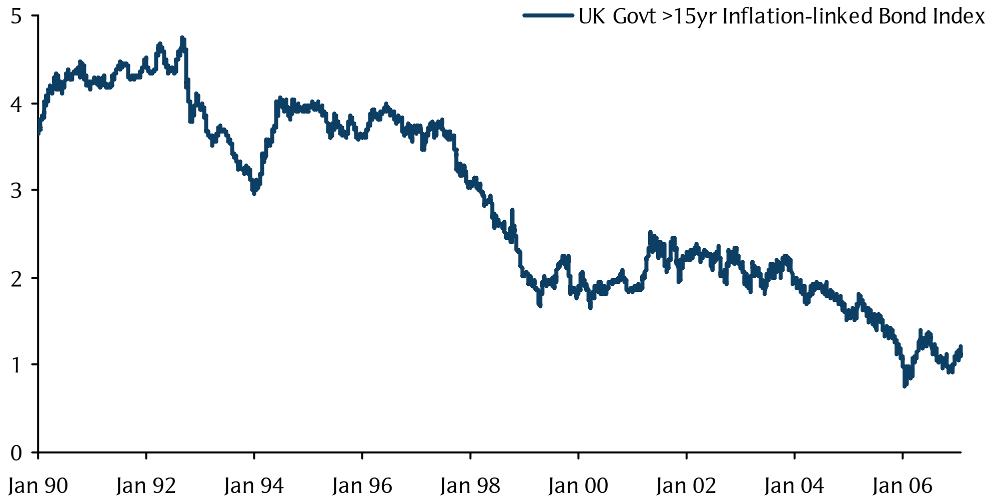
the bulk of any equity holdings that it might inherit. This is where the influence of TPR might come to be felt, since judging from their statement in October, it clearly has doubts over the wisdom of transfers and so may well insist on a more risk averse investment policy be put in place.

How much buying there might be on the back of a transfer is an open question. When the scheme is bought out, the existing assets of the scheme (plus some additional assets to cover the full buyout price) will pass across to the insurer. If the existing assets are a good (duration) match for the liabilities, then there could be very little buying. However, if existing assets are very short (which is most likely), then there will be a large amount of buying that the insurer might do to match duration and hence reduce capital requirements. It is this latter flow, initiated by TPR but aided by the regulatory framework, which may become one of the key themes at the long end of both the nominal and real curves in 2007 if the third party BPA business takes off. It is difficult to quantify exactly how large the flows that we may see might be. But in terms of asset allocation, it is not unreasonable to assume that the bulk of the assets that the third party would buy would be equity-based and that the ultimate portfolio would be fixed income-based and so we could see sizeable portfolio shifts.

Indexation: a “real” problem requires a “real” solution

The issue of indexation is a key one as it has largely been responsible for the development of the inflation derivatives market. The use of inflation derivatives has become a routine part of the array of instruments that real yield investors can use in order to begin to hedge pension liabilities. What has been more interesting is the alternative routes that pension schemes have used to gain exposure to real returns. In particular, schemes are now looking to use alternative asset classes such as infrastructure ownership (directly or via pooled investment vehicles) or even property investments as ways of getting access to inflation-linked cash flows. The property route has most recently garnered most attention after Marks and Spencer’s innovative deal with their pension scheme involving the lease payments on some of their property portfolio. But it can also involve third-party schemes (eg, Tesco’s deal with BA Pension Funds – although strictly speaking our understanding is that this was not a pure inflation deal). This is clearly a route that other retailers might wish to follow as retail sector rents are often linked to RPI and general retailers are often seen as natural issuers of inflation-linked paper. These innovative solutions make sense as long-dated real yields have fallen sharply over the past 10 years and, faced with almost insatiable demand for inflation-linked assets, are unlikely to back up to levels seen in the mid 1990s in the near term.

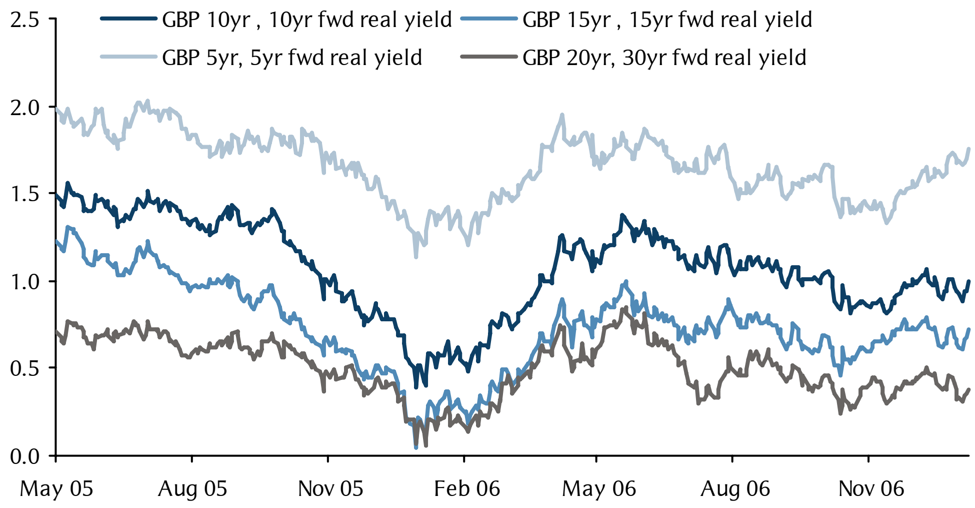
Figure 52: UK Government >15 yr Inflation-linked gilt Index – real yield (%)



Source: Barclays Capital.

The demand has pushed long-dated real yield to levels that are widely regarded as untenable, but have yet broadly persisted. The truth of the matter is that as long as there remains an imbalance between supply of inflation-linked assets and an environment where asset and liability management is actively encouraged by investment advisers, then such levels are likely to persist. Another interesting development has been the fact that the low level of ultra-long real forward rates has meant that investors have preferred intermediate forward rates, balking at locking in ultra-long forward real rates at record low levels and with half an eye on hedging their accounting risk rather than true liability exposure. The difference between the two forms of hedges is that true liability hedging would involve hedging all exposures However, from an accounting perspective, the discount rate used to value liabilities is taken to the yield of a long dated high quality corporate bond. The duration of a AA >15 yr corporate bond index is currently around 13 years, as the majority of bond in the index will be of between 15-25 yr maturity, so the discount factor applied to liabilities will be highly sensitive to 15-25 yr discount rates rather than anything longer. Liabilities are then discounted at a flat rate rather than using any term structure assumptions. So, in order to hedge accounting risk, pension schemes have focused their attention on shorter maturities on the curve. This has seen the belly of the curve richening relative to other parts of the curve. As Figure 53 illustrates relative to the intermediate forwards, the richness of the ultra-long real forward rates offers little value to long-term investors.

Figure 53: Selected real forward rates (%)



Source: Barclays Capital.

Conclusion

It would seem that 10 years down the line, we appear to be no closer to a solution to the "pension problem". Accounting and regulatory reform has come and gone and done little to ease the burden, but we would argue that there has been a successive watering down of regulation, which has been an attempt to ease the burden and reduce the level of perverse incentives created in previous legislation.

What is apparent is that when confronted with an issue, the most effective solutions have come from the market – the creation of inflation derivatives, innovative linkages between real assets and real liabilities, creating portfolio structures that provide both return and hedging. And it is the market that drives corporate schemes into hedging – albeit with some encouragement from the regulatory authorities as the flow into ALM strategies is largely determined not solely by regulation but by market level and timing.

Chapter 6 – UK asset returns since 1899

Sree Kochugovindan, Roland Nilsson

We present the real returns of the major asset classes in the UK and analyse returns on equities, gilts and cash from end-1899 to end-2006. Index-linked gilt returns are available from 1982, while corporate bonds begin in 1990. The returns reported in this chapter are real returns. In order to deflate the nominal returns, a cost-of-living index is computed, which uses the Bank of England inflation data from 1899 to 1914 and thereafter the Retail Price Index, calculated by the Office of National Statistics. Figure 54 summarises the real investment returns of each asset class over various time horizons.

Figure 54: Real investment returns by asset class (% pa)

Last	2006	10 years	20 years	50 years	107 years*
Equities	11.4	4.9	6.9	7.1	5.3
Gilts	-4.4	4.6	5.6	2.2	1.1
Corporate bonds	-4.5	6.7			
Index-linked	-2.1	4.5	4.5		
Cash	0.4	2.6	3.7	2.0	1.0

*Note: * Entire sample. Source: Barclays Capital.*

The first column provides the real returns over one year, the second column the real annualised returns over 10 years, and so on. The equity rally continued in 2006. Equities outperformed all other assets for the fourth consecutive year. Despite the sharp global equity sell off during May, the FTSE All Share posted annual real returns of 11.4% in 2006, slightly weaker than the 19% seen in 2005. UK equity performance was in line with the US equity market last year; however, the FTSE All share lagged behind its European counterparts. Most major European indices posted gains of over 19% in real terms with Spanish equities posting real returns of 31%. Over the past few years equity markets across Europe and the US have been boosted by strong M&A activity as well as robust economic growth. ONS figures showed that the net value of UK-targeted M&A deals had almost doubled since the end of 2003 and by the end of the third quarter of 2006 was approaching levels last seen in 1999, when the dot-com boom was well underway.

Bonds posted a lacklustre performance in 2006. Nominal returns for 15-year gilts were flat over the year. The stronger pace of inflation eroded bond returns further. Annual RPI inflation rate of 4.4% during 2006 was the highest since 1991 and pushed real total returns into negative territory. Longer-run averages were lowered as a result of last year's bond returns. Ten-year annualised averages fell from 5.6% to 4.6%, while the 20-year average dipped from 6.2% to 5.6%. Fifteen-year corporate bonds and index-linked returns also suffered in 2006 both posting negative real returns.

Cash returns remained fairly stable in nominal terms. However, monetary tightening of half a percentage point during 2006, helped protect real returns and led to cash outperforming bonds.

Figure 55: Real investment returns (% pa)

	Equities	Gilts	Index-Linked	Cash
1906-16	-3.7	-6.6		-2.8
1916-26	6.5	3.1		2.6
1926-36	9.7	10.3		4.2
1936-46	2.5	1.6		-2.1
1946-56	2.3	-6.9		-2.8
1956-66	7.8	-0.3		1.8
1966-76	-0.3	-5.6		-2.0
1976-86	14.6	6.0		2.6
1986-96	9.0	6.6	4.4	4.9
1996-2006	4.9	4.6	4.5	2.6

Source: Barclays Capital.

Figure 55 decomposes real asset returns for consecutive 10-year intervals. Fifteen-year gilts lost the title of best-performing asset over the past decade as last year's weakness dragged the 10-year annualised average lower. Four consecutive years of growth have helped equities erase the losses in the wake of the technology stock crash and equities are now the best performing asset of the past 10 years.

Ranking the annual returns and placing them into deciles provides a clearer illustration of their historical significance. The results for 2006 are shown in Figure 56, and as highlighted earlier, are weaker than the returns seen in 2005. The equity portfolio is ranked in the fifth decile for 2006. Slightly weaker than the third decile ranking seen in 2005, but still, a dramatic improvement from 2002, when equities were ranked in the worst decile in the recorded history. The ranking for both gilts and index-linked bonds has dropped from the third decile in 2005 to the eighth decile in 2006, while the ranking for cash fell from fifth to seventh.

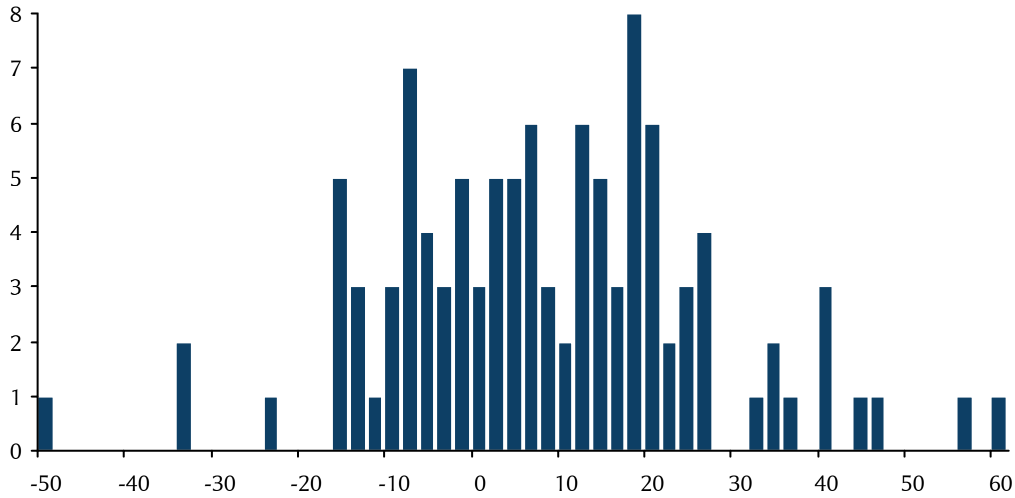
Figure 56: 2006 real returns with historical performance ranked by decile

	Decile
Equities	5
Gilts	8
Index-Linked	8
Cash	7

Notes: deciles ranking: 1 signifies the best 10% of the history, 10 the worst 10%. Source: Barclays Capital.

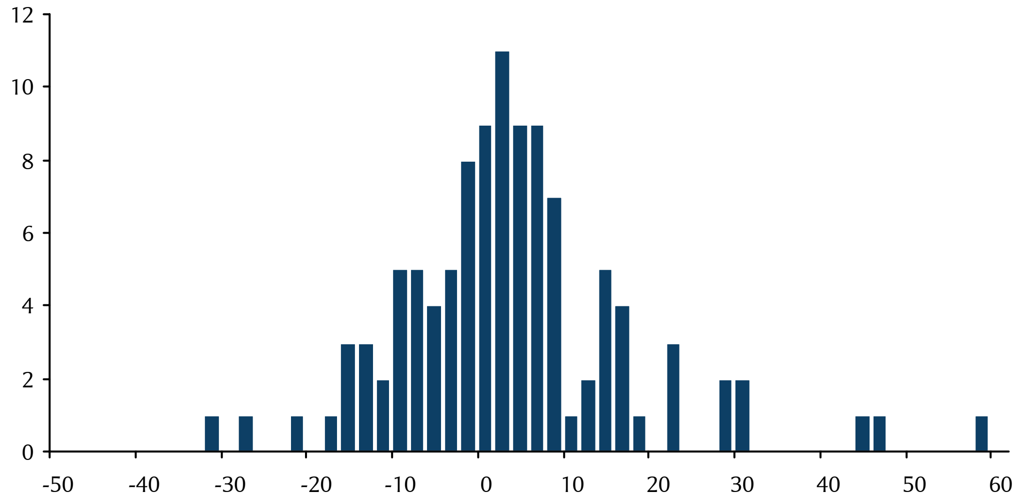
The following charts illustrate the distribution of returns over the past 107 years. The charts clearly show that equity returns have the widest dispersion, followed by gilts and then cash. The observed distributions are in accordance with financial theory; from an ex ante perspective we would apply the highest risk premium to equities given their perpetual nature and our uncertainty over future growth in corporate profits and changes in the rate of inflation. For gilts, the uncertainty with respect to inflation remains, but the risk from the perspective of coupon and principal is reduced given their government guarantee. Over the past 30 years, the dispersion of annual gilt returns has widened significantly; in the 1970s and 1980s, an unexpected increase in the inflation rate led to significant negative real returns, while in the 1990s, an unanticipated fall in inflation in conjunction with lower government deficits facilitated above-average real gilt returns. The cash return index has the lowest dispersion. In recent years, the real returns to cash have been relatively stable, with the move towards inflation targeting by the Bank of England stabilising the short-term real interest rate.

Figure 57: Distribution of real annual equity returns



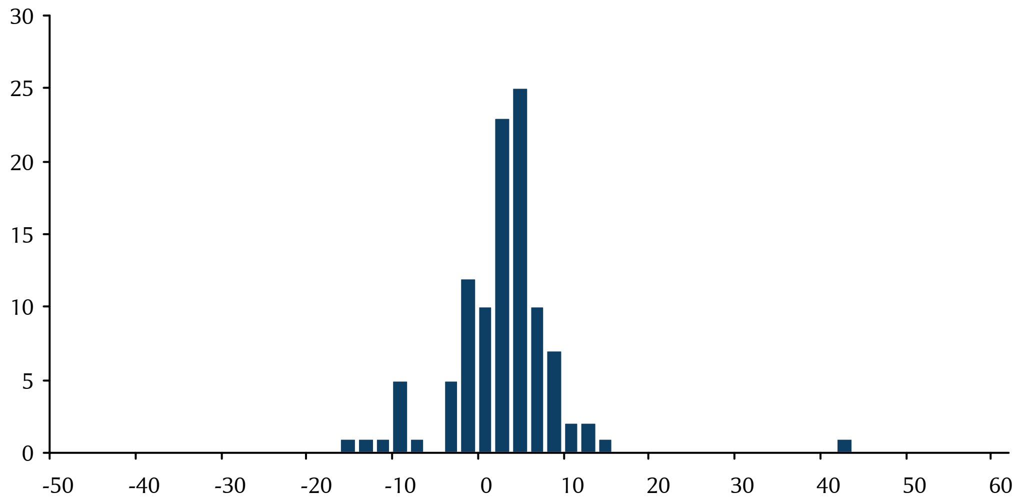
Source: Barclays Capital.

Figure 58: Distribution of real annual gilt returns



Source: Barclays Capital.

Figure 59: Distribution of real annual cash returns

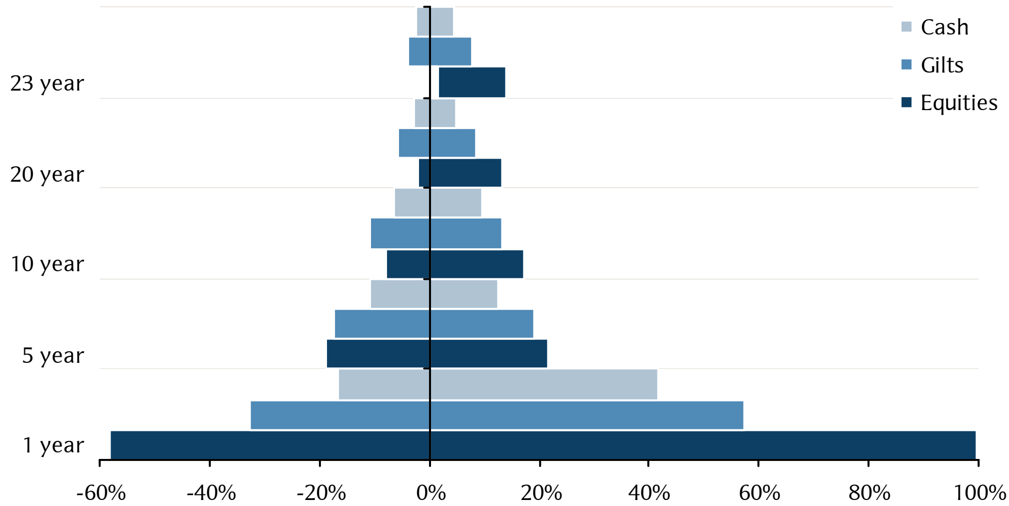


Source: Barclays Capital.

Performance over time

Having analysed the annual real returns since 1899, we now examine returns over various holding periods. The following chart compares the annualised returns when the holding period is extended to 5, 10 and 20 years.

Figure 60: Maximum and minimum real returns over different time periods



Source: Barclays Capital.

The most striking feature of the chart is the change in the volatility of returns as the investments are held for longer periods. The variance of equity returns falls significantly in relation to the other assets as the holding period is extended. When equities are held for as long as 20 years, the minimum return is actually greater than for either gilts or cash. However, as discussed in previous issues of this study, we do not believe that this fall in volatility should be interpreted as an indication of mean reversion in the returns. The series used are of rolling returns, hence there is an overlap in the data. For example, in the 10-year holding period, nine of the annual returns will be the same in any consecutive period, thus the observations cannot be considered as independently drawn.

The following table illustrates the performance of equities against gilts and cash for different holding periods. The first column shows that over a holding period of two years, equities outperformed cash in 71 out of 107 years, thus the sample-based probability of equity outperformance is 67%. Extending the holding period out to 10 years, the probability of equity outperformance rises to 93%.

Figure 61: Equity performance

	Number of consecutive years					
	2	3	4	5	10	18
Outperform cash	71	74	77	77	91	89
Underperform cash	35	31	27	26	7	1
Total number of years	106	105	104	103	98	90
Probability of Equity Outperformance	67%	70%	74%	75%	93%	99%
Outperform gilts	74	80	81	78	81	82
Underperform gilts	32	25	23	25	17	8
Total number of years	106	105	104	103	98	90
Probability of Equity Outperformance	70%	76%	78%	76%	83%	91%

Source: Barclays Capital.

The importance of reinvestment

The following tables show how the reinvestment of income affects the performance of the various asset classes. The first table shows the value of £100 invested at the end of 1899 without reinvesting income, the second table with reinvestment. £100 invested in equities at the end of 1899 would be worth just £213 in real terms without the reinvestment of dividend income, while with reinvestment the portfolio would have grown to £25,022. The impact upon the gilt portfolio is less in absolute terms, but the ratio of the reinvested to non-reinvested portfolio is over 300 in real terms.

Figure 62: Today's value of £100 invested at the end of 1899 without reinvesting income

	Nominal	Real
Equities	13,311	213
Gilts	45	1

Source: Barclays Capital.

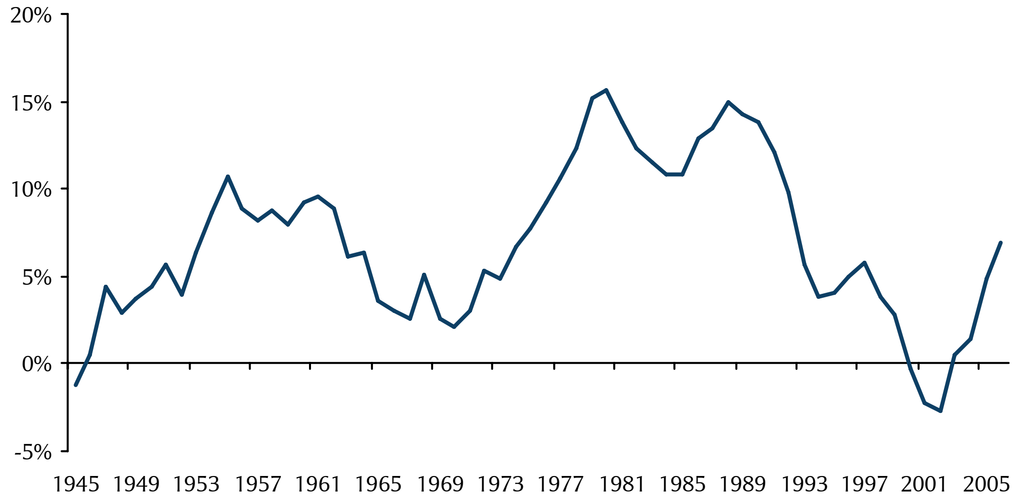
Figure 63: Today's value of £100 invested at the end of 1899, income reinvested gross

	Nominal	Real
Equities	1,561,732	25,022
Gilts	20,132	323
Cash	17,856	286

Source: Barclays Capital.

Turning to the dividend growth ratio, the next chart shows that the five-year average growth rate has reached 6.9%, boosted by a 10% rise during 2006. Between 1997 and 2001, dividend income had fallen a cumulative 15% as companies cut dividends with the reasoning that funds would be put to better use by corporates than the shareholder. In the wake of the dotcom crash, investors actively sought income-yielding stocks as a method of lowering risk, a trend that has remained in place since 2001. As a result, value stocks have outperformed growth stocks by about 25% over the past five years, and have resulted in a cumulative 39% growth in overall dividend income since 2001.

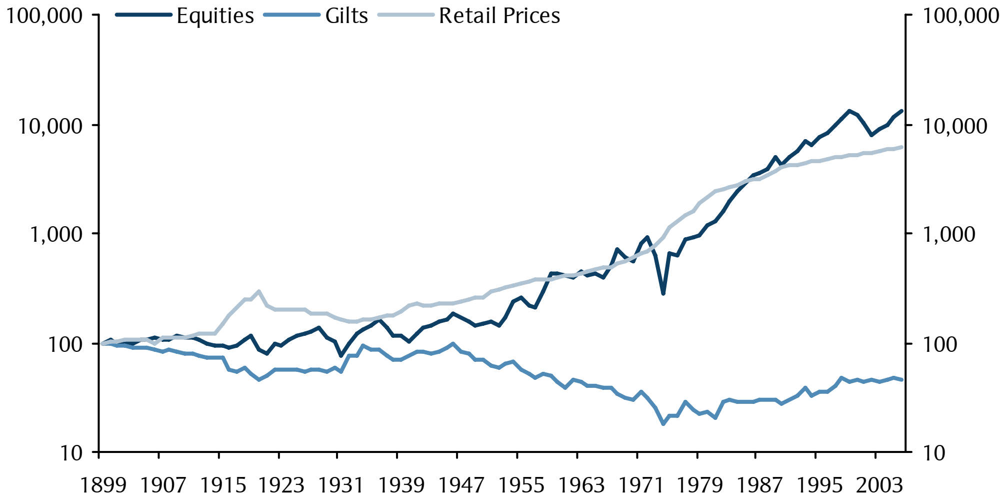
Figure 64: Five-year average dividend growth rates



Source: Barclays Capital.

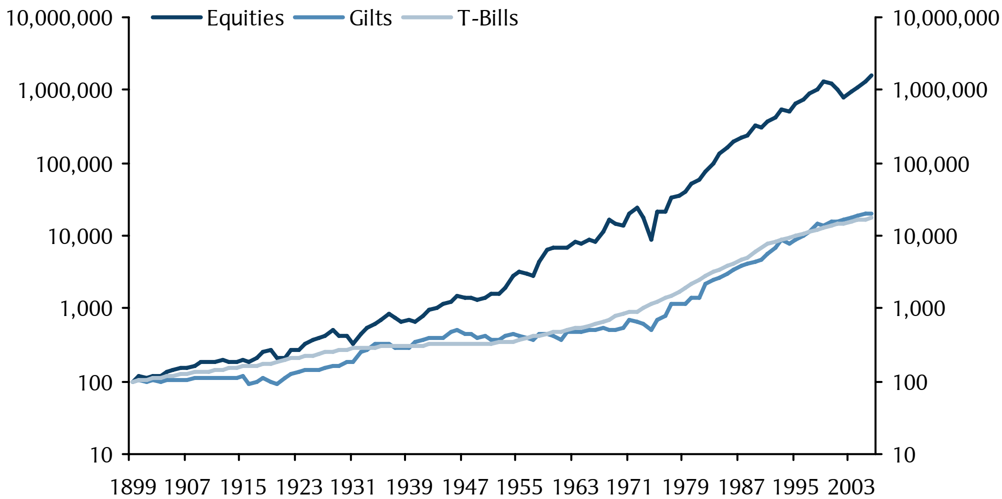
The following charts illustrate the time series of price indices and total return indices for equities, gilts and cash over the entire series. These returns are in nominal terms and are shown with the use of a logarithmic scale.

Figure 65: Barclays price indices: Nominal terms



Source: Barclays Capital.

Figure 66: Barclays total return indices: Nominal terms, gross income reinvested



Source: Barclays Capital.

Figure 67: Today's value of £100 invested at the end of 1945 without reinvesting income

	Nominal	Real
Equities	8,342	302
Gilts	49	2

Source: Barclays Capital.

Figure 68: Today's value of £100 invested at the end of 1945, gross income reinvested

	Nominal	Real
Equities	125,243	4,531
Gilts	4,323	156
Cash	5,468	198

Source: Barclays Capital.

Figure 69: Today's value of £100 invested at the end of 1990, gross income reinvested

	Nominal	Real
Equities	523	335
Gilts	425	272
Index-linked gilts	335	215
Treasury bills	262	168
Corporate bonds	603	386

Source: Barclays Capital.

Chapter 7 – US asset returns since 1925

Sree Kochugovindan, Roland Nilsson

This is the eighth year in which we have incorporated US asset return data, kindly provided by the Centre for Research into Security Prices (CRSP). The CRSP database continues to be maintained by the Chicago Graduate School of Business. The first holding period covered in the analysis below is the calendar year 1926, which would represent money invested at the end of 1925 and its value at the end of 1926. The total sample includes 81 annual return observations for equities, bonds and cash. The construction of the series is explained in more detail in the indices section towards the back of the study. The nominal return series are deflated by the change in the consumer price index, which is calculated by the Bureau of Labor Statistics.

Figure 70: Real investment returns (% pa)

Last	2006	10 years	20 years	50 years	81 years*
Equities	13.3	6.4	8.5	6.6	7.1
Bonds	-1.2	5.2	5.2	2.6	2.3
TIPS	-4.5				
Cash	2.2	1.1	1.4	1.2	0.7

*Note: *Entire sample.*
Source: CRSP, Barclays Capital.

Figure 70 provides the real annualised returns over various time horizons. US equities rallied 13% in real terms during 2006, a strong rebound from the lacklustre returns produced in the previous year. Equities returned less than 4% in real terms during 2005, and even underperformed bonds. As with the UK stock market, US equities benefited from the mergers and acquisitions boom, and also overcame a sharp 9% sell off in May 2006. The 10 year equity risk premium narrowed to 1.2% from 1.9% last year, while the long run equity risk premium rose by 0.1% to 4.8%.

US 20 yr bond nominal returns were flat over the year, leaving real returns in negative territory. Bonds were the worst-performing asset, even underperforming cash. Cash benefited from two years of monetary tightening and provided the first positive real return since 2001. Figure 71 breaks the study period down into consecutive decades.

Figure 71: Real Investment Returns (% pa)

	Equities	Bonds	Cash
1927-36	8.7	7.4	4.1
1937-46	0.9	-0.7	-4.0
1947-56	14.4	-1.7	-1.2
1957-66	7.8	1.0	1.2
1967-76	0.4	-1.4	-0.2
1977-86	7.9	3.2	2.5
1987-96	10.7	5.3	1.6
1997-2006	6.4	5.2	1.1

Source: CRSP, Barclays Capital.

Equities have outperformed bonds and cash over each decade since the inception of the data. Equities' best decade was that immediately after WWII. Bonds have enjoyed the strongest back-to-back performance over the past three decades, since the 1930s.

Strong real bond returns are largely explained by continued disinflation since the late 1970s, raising the value of the discounted principal for long-term Treasury bonds.

Figure 72 ranks the relative performance of the 2006 returns by deciles, in order to get a clearer indication of the historical significance. US equity ranking has risen from the seventh decile in 2005 to the fifth decile in 2006. This is similar to the performance of UK equities, which was also ranked in the fifth decile last year. Last year's negative real returns pushed the bond ranking down to the seventh decile, while cash moved up to the third decile.

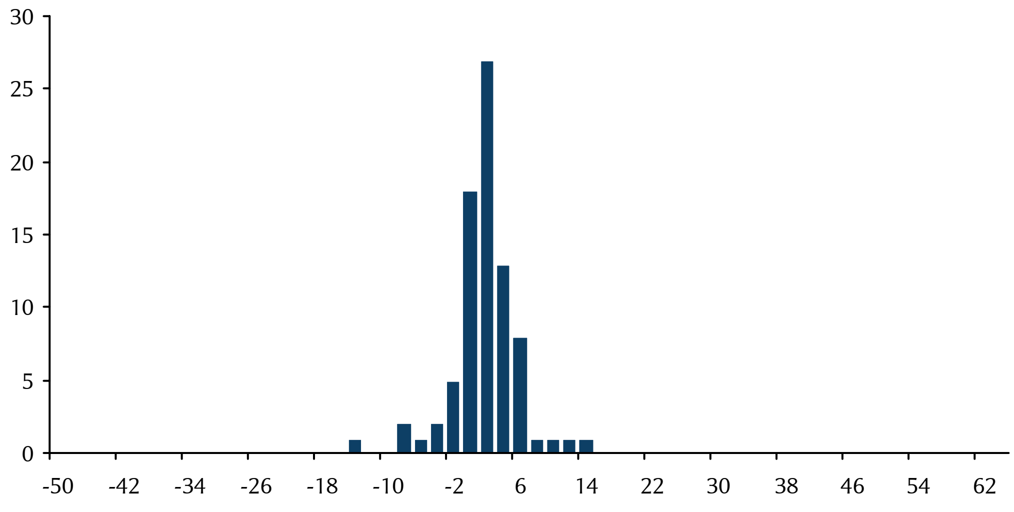
Figure 72: 2005 real returns with historical performance ranked by decile

	Decile
Equities	5
Bonds	7
Cash	3

Notes: deciles ranking: 1 signifies the best 10% of the history, 10 the worst 10%.
Source: CRSP, Barclays Capital.

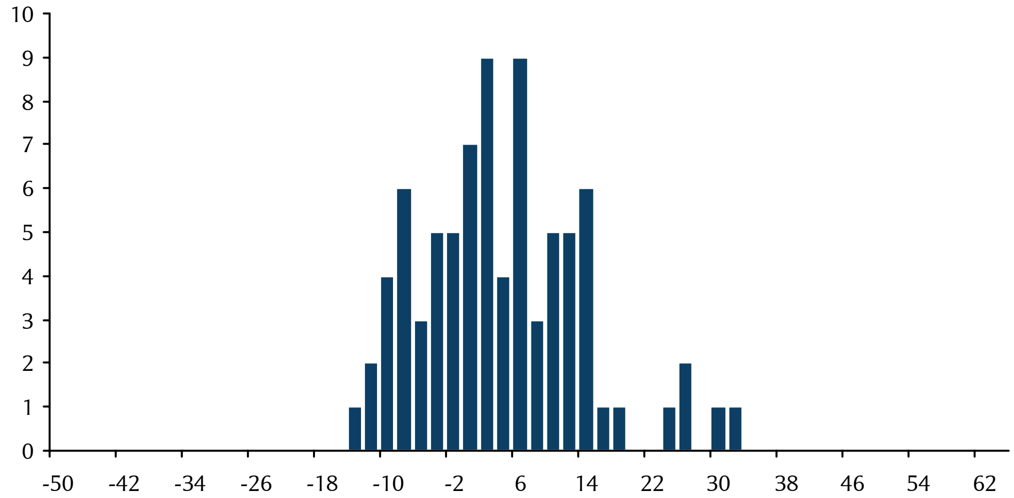
Figure 73, Figure 74 and Figure 75 plot the sample distributions using a histogram with identical maximum and minimum categories across each. These charts are useful in so much as they allow the reader to appreciate the volatility of each asset class, while at the same time gain an understanding of the distribution of the annual return observations. It is clear from the charts that cash exhibits the lowest volatility of each asset class, with bonds next and equities exhibiting the highest dispersion of returns.

Figure 73: Distribution of real annual cash returns



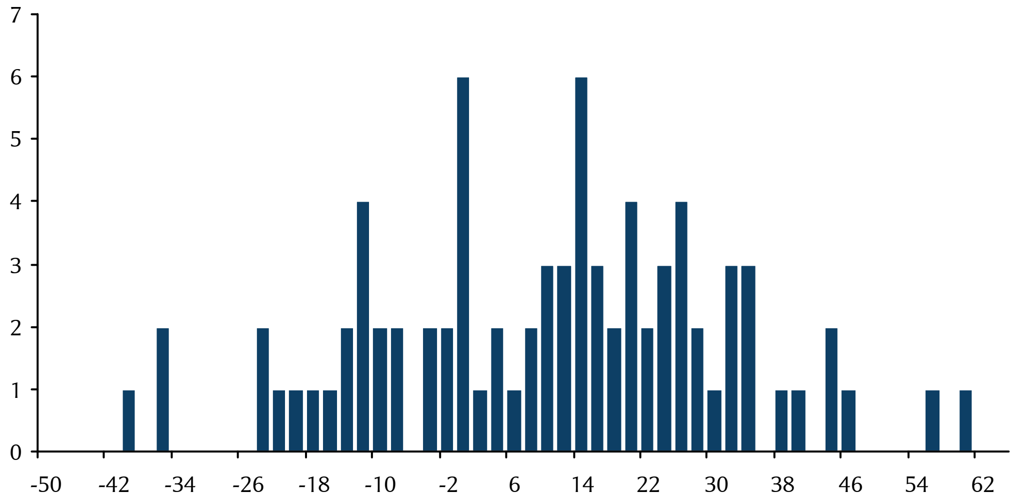
Source: CRSP, Barclays Capital.

Figure 74: Distribution of real annual bond returns



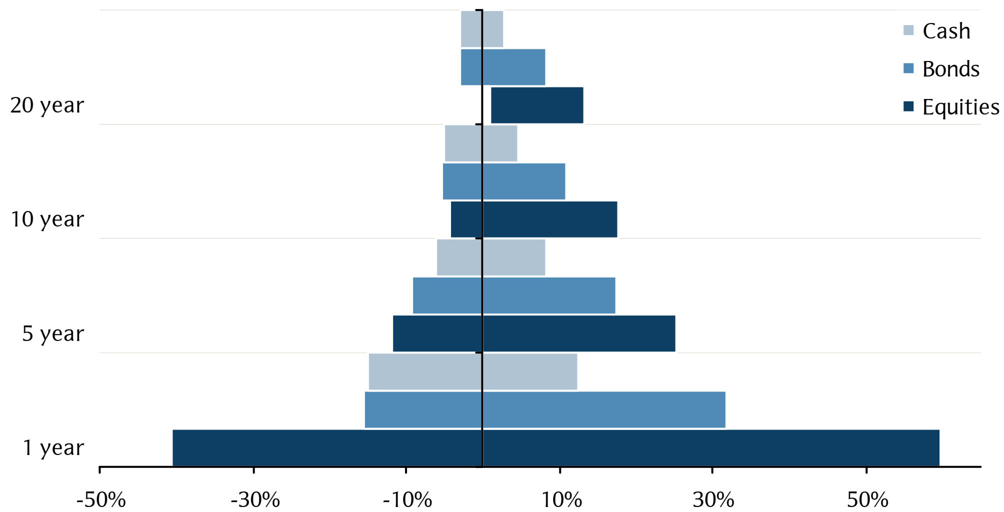
Source: CRSP, Barclays Capital.

Figure 75: Distribution of real annual equity returns



Source: CRSP, Barclays Capital.

Figure 76: Maximum and minimum real returns over different periods



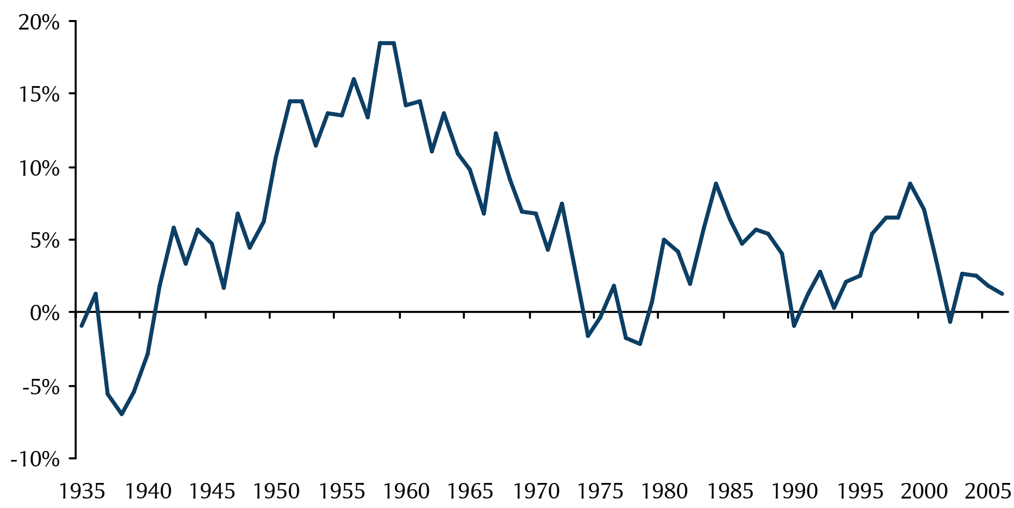
Source: Barclays Capital, CRSP.

In Figure 76, we show the return distribution extremes for various holding periods. The volatility of equities over very short horizons is shown clearly in the maximum and minimum distribution of one-year returns. As we extend the holding period, the distribution begins to narrow. Figure 77 shows that over the past 80 years, the worst average annualised 20-year return for equities has been 0.9%, while the best average annualised return stood at 13.2%. This does not indicate that it is impossible to lose money by holding equities over a 20-year period, in our view, as the analysis is being conducted on an ex post basis. It is still possible that equities generate negative real returns over a 20-year period. The chart is merely highlighting the fact that such an occurrence seems unlikely given their performance over the past 81 years.

In addition, over the long term, we would expect the ex ante equity risk premium to provide a cushion against future uncertainty. Over the long term, we would expect such a premium to provide an offset against the effect of unanticipated events. It could be argued that the lower extreme of the long-term equity return distribution is a function of the embedded risk premium in the ex ante valuation of equities. Bonds and cash have experienced negative returns over a 20-year horizon, a reflection of the unexpected jumps in inflation, which took effect at various points in the past century.

Figure 77 plots the US equity risk premium and shows that the 10-year annualised excess return of equities over bonds currently stands at 1.2%. The equity risk premium had bounced back from the lows of 2002. However, over the past two years, the risk premium has dipped slightly.

Figure 77: Equity-risk premium – Excess return of equities relative to bonds (10 years annualised)

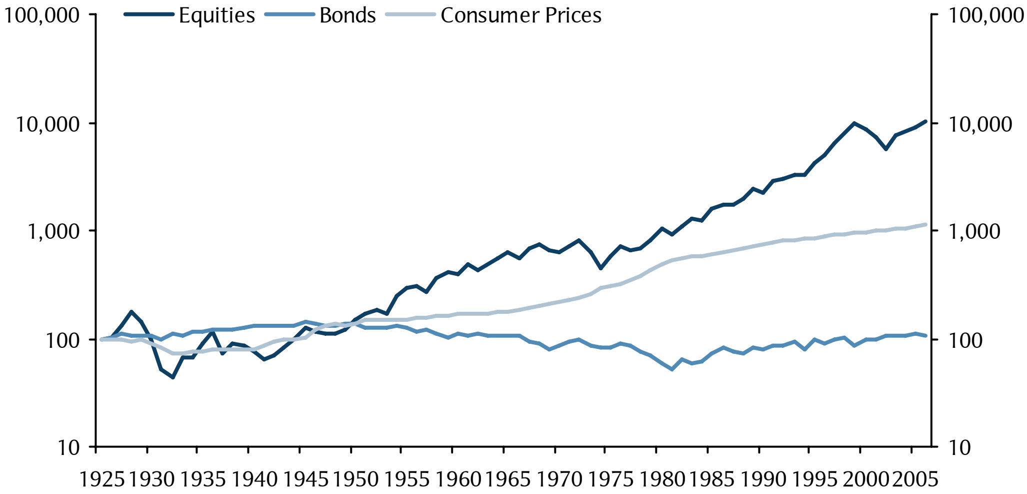


Source: CRSP, Barclays Capital.

The Importance of reinvestment

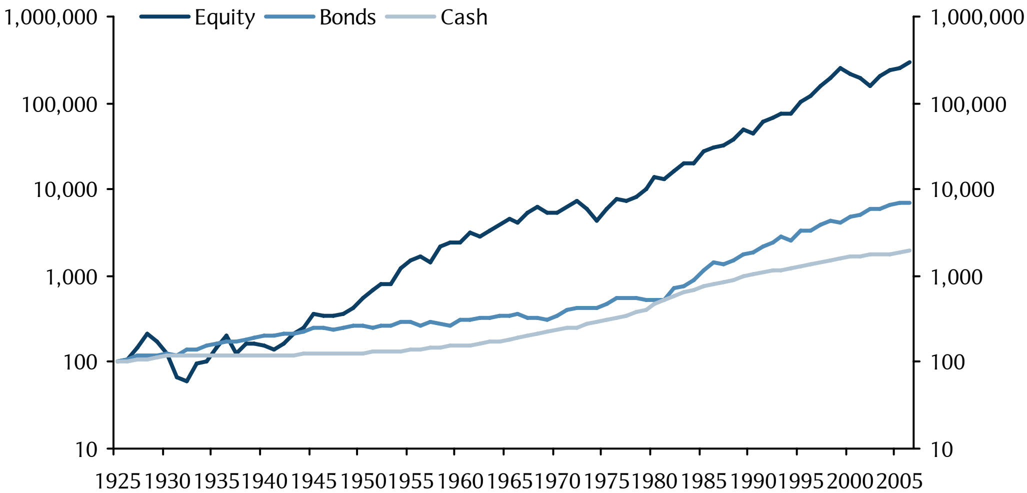
Figure 78 and Figure 79 show the importance of income reinvestment both in the form of dividends on equity investments and coupons on government bonds.

Figure 78: Barclays US price indices in nominal terms



Source: CRSP, Barclays Capital.

Figure 79: Barclays US total return indices in nominal terms with gross income reinvested



Source: CRSP, Barclays Capital.

Figure 80: Value of $100 invested at the end of 1925 without reinvesting income

	Nominal	Real
Equities	10,025	889
Bonds	105	9

Source: CRSP, Barclays Capital.

Figure 81: Value of $100 invested at the end of 1925 with income reinvested gross

	Nominal	Real
Equities	292,196	25,918
Bonds	7,156	635

Source: CRSP, Barclays Capital.

Chapter 8 – Barclays indices

We have calculated three indices: changes in the capital value of each asset class; changes to income from these investments; and a combined measure of the overall return on the assumption that all income is reinvested.

Additional series allow for the effects of inflation. The data for cash includes building society deposit rates and Treasury bills. The series on index-linked securities is based at December 1982 and the corporate bond index starts at the end of 1990.

Barclays Equity Index

The Barclays Equity Index is designed to give as accurate a measure as possible of the performance of a representative portfolio of equities. Three main types of index can be used. The FT Index, which for years was the most widely used in the UK, is a geometric index, which means that the price changes of the 30 shares that comprise it are multiplied together to produce the change on the index. This is a fair basis for indicating short-term market behaviour, but over long periods imparts a downward bias. The second type of index uses the Dow formula, in which the prices of a number of shares are added together. This does not have the distorting effect of a geometric index, but the weighting of the various shares is arbitrary and varies with changes in capitalisation.

The most accurate and representative indices are arithmetic indices, weighted by the number of shares in issue by each company. These indices include virtually all the large quoted companies, they accurately reflect the behaviour of an equity market. The Standard & Poor's Indices are of this type, and they date back to the 1920s. The FT Actuaries Indices, introduced in the 1960s, were the first of this type in the UK. Subsequently, a number of weighted arithmetic international indices, such as those calculated by Morgan Stanley Capital International and Datastream, have been introduced. More recently, the FTSE 100 Index, which uses the same construction but incorporates only the 100 leading shares, has been introduced and is now generally used as the main market indicator because it is calculated on a real-time basis throughout the day.

The new Barclays Equity Index, which is used in this study, is a weighted arithmetic index, and is now available for the period since 1899 with a dividend yield and an income index. The original Barclays Equity Index, used in editions of this study until 1999, was first calculated retrospectively in 1956 and included 30 shares chosen to be similar to those in the FT 30 Index, which covers the period 1935 to 1962. For the 2000 edition of this study, we compiled a new index for the years between 1899 and 1935, based on the 30 largest shares by market capitalisation in each year. From 1962, the Barclays Equity Index is based on the FTSE Actuaries All-Share Index because, with its broader coverage, it gives a more accurate picture of market movements. The indices are only calculated annually, at year-end.

The equity returns between 1899 and 1935 are therefore calculated from a new Equity Index, consisting of the 30 largest shares by market capitalisation in each year; between 1935 and 1962 they are calculated from the FT 30 Index and from 1962 onwards they are derived from the FTSE Actuaries All-Share Index.

Figure 82: Equity Index constituents

Constituents at December 1899	Constituents at December 1934	Constituents at December 1962
De Beers Consolidated Mines	Woolworth Ltd	Associated Portland Cemen
Rio Tinto Ltd	Imperial Chemical Industries	Bass Mitchells & Butlers
Armstrong Whitworth	Shell" Transport & Trading Ltd	British Motor
Consolidated Gold Fields	CourtauldsLtd	Coats Patons
London and County Bank	Royal Insurance Co	Cory (William)
London City & Midland Bank Ltd	Barclay & Company	Courtaulds
Lloyds Bank Ltd	Lloyds Bank	Distillers
London & Westminster Bank Ltd	Prudential Assurance Co Ltd	Dunlop
Vickers, Sons & Maxim Ltd	Westminster Bank Ltd	EMI
Imperial Ottoman Bank	Midland Bank Ltd	Fine Spinners & Doublers
Parrs Bank Ltd	London & Lancashire Fire Ins. Co	General Electric
Royal Insurance Co	North British & Mercantile In. Co Ltd	Guest Keen
Tharsis Sulphur & Copper Ltd	Reckitt & Sons Ltd	Hawker Siddeley
Great Northern of Copenhagen	County of London Electric Supply Co	House of Fraser
Simmer & Jack PropietaryMines Ltd	Unilever Ltd	ICI
North British & Mercantile Insurance	Tate & Lyle Ltd	Imperial Tobacco
Consett Iron Ltd	Alliance Assurance Company	International Stores
Eastern Extension Australasia * China Ltd	Boots Pure Drug Co Ltd	Leyland Motors
Nobel Dynamite TstLtd	Pearl Assurance Co	London Brick
Mysore Gold Mining Ltd	Marks & Spencer Ltd	Murex
Exploration Co	Cory (WM.) & Son	P & O Steam Navigation
Alliance Assurance Co	National Bank Of Egypt	Rolls-Royce
Aerated Bread Ltd	Consolidated Gold Fields Of South Africa	Swan Hunter
Howard & BulloughLtd	Bass, Ratcliff & Gretton Ltd	Tate & Lyle
Sun Insurance Office	GeduldProp Mines Ltd	Tube Investments
New JagersfonteinMining & Expl Ltd	Sun Insurance Office	Turner & Newall
Champion Reef Gold Mining	Bank Of Australasia	United Steel
National Telephone Ltd	British South Africa Co	Vickers
Northern Assurance	Chartered Bank Of India, Australia & China	WatneyMann
Phoenix Assurance Co	North Eastern Elec Supply Co	Woolworth

Source: Barclays Capital.

The Equity Index is a weighted arithmetic average; the weights of the constituent companies for each year are proportional to their market capitalisation at the beginning of the year. Each year a fund was constructed. The number of shares in the fund of each of the 30 constituent companies was calculated so that their market value at the beginning of the year was the weighting of the company in the index. The value of the fund was calculated annually at the end of the year.

For the period 1899-1962 the Equity Income Index is based on the Barclays Equity Fund. The Income Index relates to the dividend income actually received in the 12 months prior to the date of the index. It is calculated by totalling the dividends paid on the shares in the fund. We believe that it is the only published index based on actual income receipts.

From 1963 the Income Index is derived from the yield on the FTSE All-Share Index. Despite a minimal discontinuity in the yield, in our view this is the most representative method of evaluating equity performance over the period. The dividend yield is quoted net from 1998, with non-taxpayers no longer able to reclaim ACT.

Barclays Gilt Index

The Gilt Index measures the performance of long-dated gilts. From 1899 to 1962 the index is based on the prices of undated British funds. During this period the undated stocks were a major part of the gilt market, but over the years the effect of high interest rates on their prices, together with the growing number of conventional long-dated issues, meant that undated stocks became less and less representative of the market as a whole.

Since 1962, the Barclays Gilt Index is based on a portfolio of long-dated stocks, selected on 1 January each year. The portfolio was chosen to represent as closely as possible a 20-year security on a par yield, and contains a weighted combination of four long-dated stocks with a mean life of 20½ years (so that the average life of the stocks for the year in which they are in the portfolio was 20 years). The combination and weightings of the four stocks are chosen to have the minimum possible deviation from a par yield. Small issues (less than £1bn) are excluded and in any year none of the four stocks has been allocated a weight of more than 40% or less than 5% of the index.

During the late 1980s there was a steady contraction in the number of issues that satisfy the criteria for inclusion in the Gilt Index. As a result of the lack of issues of new long-dated stocks and the fall in the remaining life of existing stocks, the universe of eligible stocks narrowed sharply. By the end of 1989 there were four stocks with a life of more than 20 years, and only two of these were over £1bn nominal.

Thus from the beginning of 1990 the index has been constructed to represent a portfolio of 15-year par yielding gilts.

Barclays Index-linked Index

The index-linked market has now been established for two decades and is capitalised at £116bn (compared with the £280bn capitalisation of the conventional market). The index has been constructed to mirror as closely as possible the rules of the conventional gilt index. An average life of 20 years was used up until 1990, and 15 years thereafter. Again, stocks have been chosen to be as close to par as possible, although of course in this case par means "indexed par".

Barclays Corporate Bond Index

The UK corporate bond market has expanded dramatically since the beginning of 1991. The index and returns are based on the Barclays Capital Over 15-year Sterling Credit Index. Clearly, we are unable to select individual stocks for this index in the way we do for the gilt indices because such a small sample of stocks cannot be representative of the market. The Over 15-year index was chosen because it is similar to the Gilt and Index-linked Gilt indices in terms of remaining life and duration.

Barclays Building Society Fund

In previous editions of this study we have included indices of the value of £100 invested in a building society at the end of 1945. We originally used the average interest rate on an ordinary share account. In the mid-1980s many building societies introduced new tiered interest rate accounts, which provided a higher rate of interest while still allowing instant access. In response to this we have been tracking both types of account, but as time progressed the old style "ordinary share accounts" became less and less representative and by the mid-1990s had been completely superseded by the new accounts. From 1986 the Barclays Index follows the Halifax Liquid Gold Account (formerly called the Halifax Instant Xtra) as a representative of the newer tiered interest rate style accounts. The Halifax is no longer a building society, having converted to a bank, so from 1998 we follow the Nationwide Invest Direct Account. This is the closest equivalent account offered by the Nationwide Building Society (which is now the largest remaining building society in the UK); the difference is that it is operated by post. This type of postal account is considered to be more representative of building society returns than the branch operated passbook accounts, which are more in the nature of a cash-based transaction account.

US asset returns

The US indices used in this study were provided by the Center for Research in Security Prices (CRSP) at the Graduate School of Business in the University of Chicago. The value weighted equity index covers all common stocks trading on the New York, American and Nasdaq Stock Exchanges, excluding ADRs. For the bond index the CRSP has used software which selects the bond that is closest to a 20-year bond in each month. The same methodology has been employed for the 30 day T-Bill.

Total returns

In this study we have shown the performance of representative investments in British equities and long gilts with additional analysis of equivalent US returns in both monetary and real (inflation adjusted) terms. The total returns to the investor, however, also include the income on the investment. This is important throughout the study for comparability between asset classes. For example, when constructing an index for a cash investment such as the Treasury Bill Index, the £100 invested at the end of 1899 grew to approximately £104 by the end of the following year. This full amount is reinvested and by the end of 1920 the value of this investment had grown to about £190. In contrast, equity and bond market returns can be split into two components: capital appreciation and dividend income. The most commonly quoted stock market indices usually only include the capital component of the return. In order to calculate returns on a comparable basis we need to include the returns obtained by reinvesting this income. This is particularly important in looking at bonds where the scope for capital appreciation is small so almost all the return will be from income. In this study total returns are calculated assuming income is reinvested at the end of the year.

Taxation

The total return to an investor depends crucially upon the tax regime. The largest long-term investors in the British equity and gilt markets are pension funds and similar institutions that (until the abolition of the advance corporation tax (ACT) credit) have not suffered tax on their income or capital; our main tables therefore make no allowance for tax until 1998, which was the first full year that non-taxpayers were unable to reclaim the ACT credit. This effectively reduced the dividend yield to non-taxpayers, and is reflected in our main tables and gross total return series.

The personal investor must suffer tax. The net return to a building society account is straightforward to compute. However, changes in the tax regime in recent years make the net return to equity and gilt investment less straightforward to calculate on a consistent basis. For example, the change to total return taxation for gilts means that it is inappropriate to calculate a net total return on the basis of taxing income alone. Thus returns are quoted gross throughout, but for reference we also quote basic tax rates.

Arithmetic and geometric averages

Our analysis of past data usually relies on calculations of the geometric mean for each series. Arithmetic averages can provide a misleading picture. For example, suppose equities rose from a base of 100 to 200 over one year and then fell back to 100 over the next year. The return for year one would have been 100% and for year two minus 50%. The arithmetic average return would be 25% even though equities are actually unchanged in value over the two years.

The geometric average return in this example would be zero. This method of calculation is therefore preferable. Over long periods of time the geometric average for total returns is the rate at which a sum invested at the beginning of the period will grow to by the end of the period assuming all income is reinvested. The calculation of geometric averages depends only on the initial and final values for the investment, not particular values at any other point in time.

For periods of one year, arithmetic and geometric averages will be the same. But over longer periods the geometric average is always less than the arithmetic average except when all the individual yearly returns are the same. For the mathematically minded, the geometric return is approximately equal to the arithmetic return minus one-half the variance of the arithmetic return.

Although geometric returns are appropriate to analyse the past, arithmetic returns should be used to provide forecasts. Arithmetic averages provide the better unbiased estimator of returns (for a statistical proof of this see Ian Cooper's paper *Arithmetic vs Geometric Premium: setting discount rates for capital budgeting calculations*, IFA Working Paper 174-93, April 1993).

Capital value indices

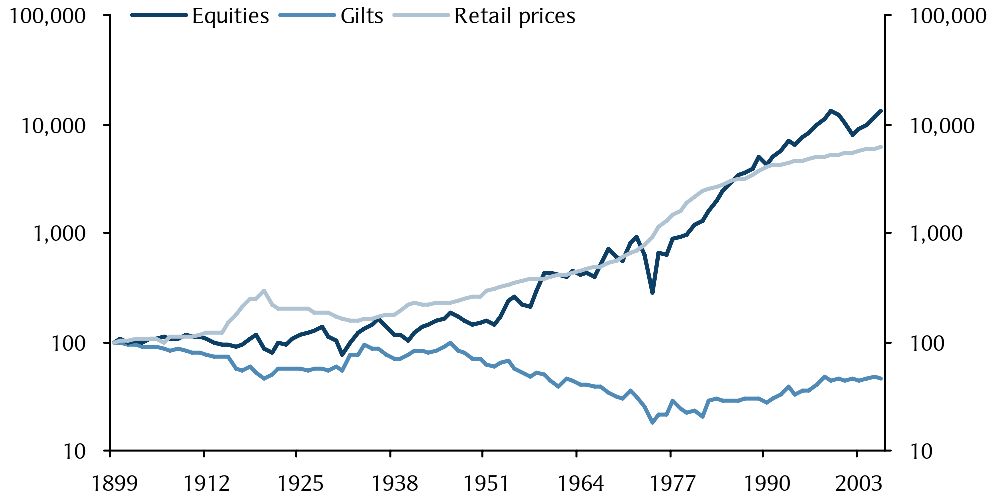
The indices in Figure 83 show the nominal capital value of £100 invested in equities and gilts at the end of 1899. The chart also plots the Barclays Cost of Living Index. Note how the equity index has correlated with increases in the cost of living versus a similar investment in gilts. The index values at the end of 2006 were 13,311 for equities, 45 for gilts, and 6,241 for the cost of living.

We then show the same capital indices adjusted for the increase in the cost of living since 1899. Figure 84 shows the end-2006 real equity price index at 213 with the real gilt price index at 0.7.

Total return indices

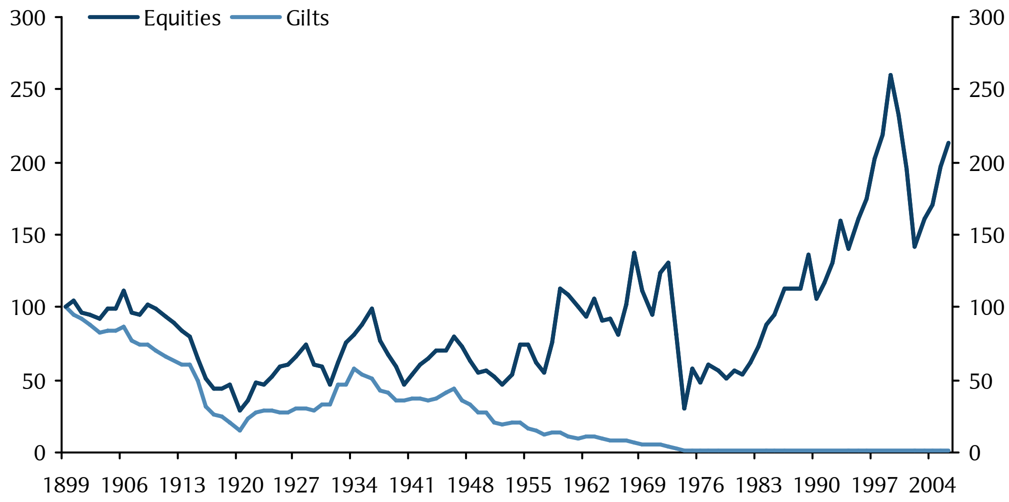
The next two charts show the nominal and real value of the equity, gilt and cash funds with gross income received reinvested at the end of each year since 1899. Figure 85 shows that the nominal worth of £100 invested in equities at the end of 1899 was £1,561,732. The same investment in gilts was worth £20,132 and in T-Bills £17,856. When these values are adjusted for inflation, the equity fund is worth £25,022, the gilt £323 and the cash fund £286.

Figure 83: Barclays price indices in nominal terms



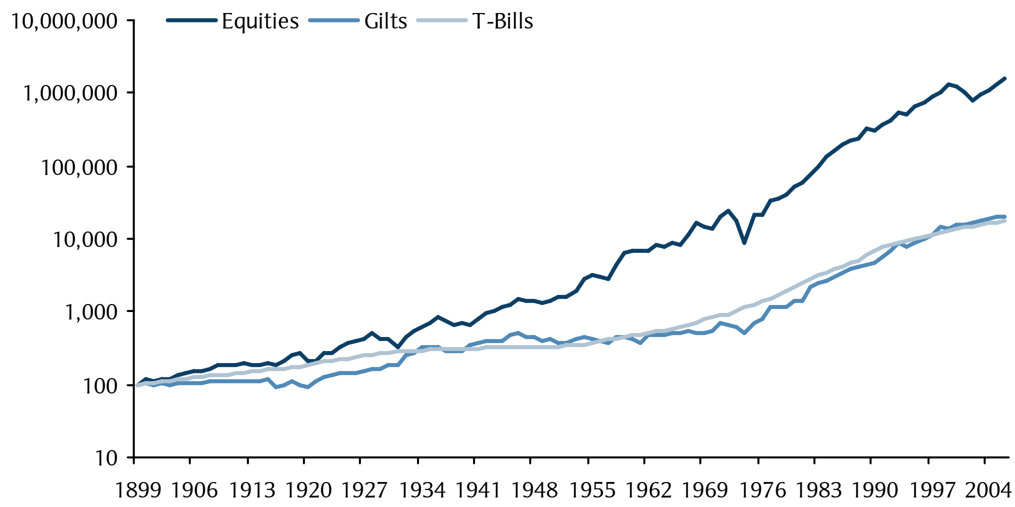
Source: Barclays Capital.

Figure 84: Barclays price indices in real terms



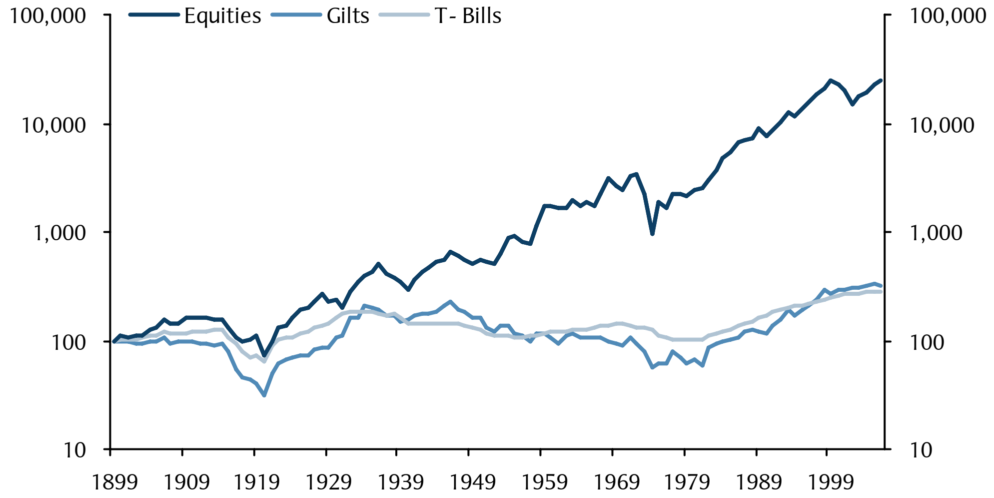
Source: Barclays Capital.

Figure 85: Barclays total return indices in nominal terms with gross income reinvested



Source: Barclays Capital.

Figure 86: Barclays total return indices in real terms with gross income reinvested



Source: Barclays Capital.

Figure 87: UK Cost of Living Index

Year	December (1899=100)	Change % In Year	Change % Five-Year Average	Year	December	Change % In Year	Change % Five-Year Average
1900	103.3	3.3		**1953**	316.0	1.1	5.2
1901	103.3	0.0		**1954**	328.5	4.0	5.3
1902	106.7	3.2		**1955**	347.7	5.8	5.8
1903	106.7	0.0		**1956**	358.3	3.0	4.0
1904	106.7	0.0	1.3	**1957**	374.9	4.6	3.7
1905	106.7	0.0	0.6	**1958**	381.8	1.8	3.9
1906	100.0	-6.2	-0.7	**1959**	381.8	0.0	3.1
1907	110.0	10.0	0.6	**1960**	388.7	1.8	2.3
1908	113.3	3.0	1.2	**1961**	405.7	4.4	2.5
1909	113.3	0.0	1.2	**1962**	416.5	2.6	2.1
1910	113.3	0.0	1.2	**1963**	424.2	1.9	2.1
1911	116.7	2.9	3.1	**1964**	444.6	4.8	3.1
1912	120.0	2.9	1.8	**1965**	464.5	4.5	3.6
1913	120.0	0.0	1.1	**1966**	481.6	3.7	3.5
1914	120.0	0.0	1.1	**1967**	493.4	2.5	3.4
1915	148.3	23.6	5.5	**1968**	522.7	5.9	4.3
1916	175.8	18.5	8.6	**1969**	547.1	4.7	4.2
1917	212.5	20.9	12.1	**1970**	590.3	7.9	4.9
1918	244.7	15.2	15.3	**1971**	643.6	9.0	6.0
1919	250.3	2.3	15.8	**1972**	692.9	7.7	7.0
1920	299.2	19.6	15.1	**1973**	766.2	10.6	7.9
1921	221.4	-26.0	4.7	**1974**	912.8	19.1	10.8
1922	200.2	-9.5	-1.2	**1975**	1140.0	24.9	14.1
1923	196.9	-1.7	-4.3	**1976**	1311.8	15.1	15.3
1924	201.3	2.3	-4.3	**1977**	1471.1	12.1	16.3
1925	196.9	-2.2	-8.0	**1978**	1594.4	8.4	15.8
1926	199.1	1.1	-2.1	**1979**	1869.3	17.2	15.4
1927	188.0	-5.6	-1.3	**1980**	2151.9	15.1	13.5
1928	186.9	-0.6	-1.0	**1981**	2411.2	12.0	12.9
1929	185.8	-0.6	-1.6	**1982**	2541.6	5.4	11.6
1930	172.4	-7.2	-2.6	**1983**	2676.7	5.3	10.9
1931	164.6	-4.5	-3.7	**1984**	2799.3	4.6	8.4
1932	159.1	-3.4	-3.3	**1985**	2958.5	5.7	6.6
1933	159.1	0.0	-3.2	**1986**	3068.6	3.7	4.9
1934	160.2	0.7	-2.9	**1987**	3182.0	3.7	4.6
1935	163.5	2.1	-1.1	**1988**	3397.6	6.8	4.9
1936	168.0	2.7	0.4	**1989**	3659.5	7.7	5.5
1937	178.0	6.0	2.3	**1990**	4001.4	9.3	6.2
1938	173.5	-2.5	1.8	**1991**	4180.0	4.5	6.4
1939	192.4	10.9	3.7	**1992**	4287.8	2.6	6.1
1940	216.9	12.7	5.8	**1993**	4369.3	1.9	5.2
1941	223.6	3.1	5.9	**1994**	4495.6	2.9	4.2
1942	222.5	-0.5	4.6	**1995**	4640.3	3.2	3.0
1943	221.4	-0.5	5.0	**1996**	4754.2	2.5	2.6
1944	223.6	1.0	3.0	**1997**	4926.6	3.6	2.8
1945	225.8	1.0	0.8	**1998**	5062.1	2.8	3.0
1946	226.9	0.5	0.3	**1999**	5151.4	1.8	2.8
1947	234.2	3.2	1.0	**2000**	5302.3	2.9	2.7
1948	245.7	4.9	2.1	**2001**	5339.2	0.7	2.3
1949	254.3	3.5	2.6	**2002**	5496.3	2.9	2.2
1950	262.4	3.2	3.0	**2003**	5650.2	2.8	2.2
1951	294.0	12.0	5.3	**2004**	5847.3	3.5	2.6
1952	312.7	6.3	6.0	**2005**	5976.6	2.2	2.4
				2006	6241.4	4.4	3.2

Figure 88: Barclays UK Equity Index

Year	Equity Price Index December		Equity Income Index December		Income Yield %	Equity Price Index Adjusted for Cost of Living		Equity Income Index Adjusted for Cost of Living	
1899	100					100			
1900	108	+8.3%	100		6.3	105	+4.8%	100	
1901	100	-7.9%	69	-30.6%	4.8	97	-7.9%	69	-30.6%
1902	101	+1.3%	80	+15.6%	5.4	95	-1.9%	78	+11.9%
1903	98	-2.7%	66	-17.3%	4.6	92	-2.7%	64	-17.3%
1904	106	+8.0%	62	-6.1%	4.0	100	+8.0%	60	-6.1%
1905	105	-0.7%	71	+13.7%	4.6	99	-0.7%	69	+13.7%
1906	112	+6.1%	77	+8.5%	4.7	112	+13.2%	79	+15.7%
1907	107	-4.7%	79	+2.9%	5.1	97	-13.3%	74	-6.4%
1908	108	+1.3%	57	-27.4%	3.6	95	-1.7%	52	-29.5%
1909	115	+6.3%	73	+26.5%	4.3	101	+6.3%	66	+26.5%
1910	112	-2.1%	69	-4.5%	4.2	99	-2.1%	63	-4.5%
1911	109	-2.9%	71	+2.1%	4.4	94	-5.7%	63	-0.8%
1912	108	-1.4%	69	-3.2%	4.4	90	-4.2%	59	-5.8%
1913	100	-7.1%	57	-16.5%	3.9	83	-7.1%	49	-16.5%
1914	96	-4.4%	57	+0.1%	4.1	80	-4.4%	49	+0.1%
1915	96	0.0%	36	-37.8%	2.6	64	-19.1%	25	-49.7%
1916	89	-6.8%	67	+88.2%	5.2	51	-21.4%	39	+58.8%
1917	93	+4.2%	66	-2.2%	4.8	44	-13.8%	32	-19.1%
1918	108	+16.3%	63	-3.6%	4.0	44	+1.0%	27	-16.3%
1919	116	+7.7%	34	-47.0%	2.0	46	+5.3%	14	-48.2%
1920	86	-25.6%	77	+128.9%	6.1	29	-37.8%	26	+91.4%
1921	80	-7.1%	79	+2.7%	6.7	36	+25.5%	37	+38.8%
1922	96	+19.8%	73	-7.9%	5.2	48	+32.5%	37	+1.8%
1923	92	-4.0%	72	-0.8%	5.3	47	-2.4%	38	+0.9%
1924	106	+15.3%	67	-7.5%	4.3	53	+12.8%	34	-9.5%
1925	117	+9.9%	73	+10.3%	4.3	59	+12.4%	39	+12.7%
1926	119	+1.8%	83	+12.5%	4.8	60	+0.7%	43	+11.2%
1927	124	+4.0%	76	-8.2%	4.2	66	+10.1%	42	-2.8%
1928	139	+12.2%	79	+3.9%	3.9	74	+12.9%	44	+4.5%
1929	113	-19.1%	90	+14.9%	5.5	61	-18.6%	50	+15.6%
1930	102	-9.2%	80	-11.0%	5.4	59	-2.1%	48	-4.2%
1931	77	-24.3%	65	-18.7%	5.8	47	-20.8%	41	-14.8%
1932	99	+27.9%	64	-2.4%	4.4	62	+32.4%	41	+1.0%
1933	119	+20.6%	60	-5.6%	3.5	75	+20.6%	39	-5.6%
1934	131	+9.8%	70	+15.7%	3.6	82	+9.0%	45	+14.9%
1935	144	+9.9%	78	+11.5%	3.7	88	+7.7%	49	+9.2%
1936	166	+15.1%	82	+5.8%	3.4	99	+12.1%	51	+3.0%
1937	138	-16.7%	93	+12.7%	4.6	78	-21.4%	54	+6.4%
1938	118	-14.9%	94	+1.8%	5.5	68	-12.7%	56	+4.4%
1939	114	-3.1%	90	-4.8%	5.4	59	-12.6%	48	-14.2%
1940	102	-10.2%	94	+4.8%	6.3	47	-20.3%	45	-7.1%
1941	119	+16.8%	91	-3.6%	5.2	53	+13.3%	42	-6.5%
1942	135	+12.9%	86	-4.5%	4.4	61	+13.4%	40	-4.0%
1943	144	+7.1%	86	-0.2%	4.1	65	+7.7%	40	+0.3%
1944	156	+8.3%	87	+0.4%	3.8	70	+7.3%	40	-0.6%
1945	160	+2.0%	88	+2.0%	3.8	71	+1.0%	40	+1.0%
1946	182	+13.9%	93	+4.9%	3.5	80	+13.3%	42	+4.4%
1947	170	-6.3%	107	+15.1%	4.3	73	-9.2%	47	+11.6%
1948	157	-7.7%	98	-7.7%	4.3	64	-12.1%	41	-12.1%
1949	141	-10.3%	103	+4.4%	5.0	55	-13.3%	42	+0.8%
1950	149	+5.6%	109	+5.6%	5.0	57	+2.3%	43	+2.3%
1951	153	+3.0%	121	+11.2%	5.4	52	-8.1%	42	-0.7%

Year	Equity Price Index December		Equity Income Index December		Income Yield %	Equity Price Index Adjusted for Cost of Living		Equity Income Index Adjusted for Cost of Living	
1952	144	-5.9%	128	+6.3%	6.1	46	-11.5%	42	-0.0%
1953	170	+17.8%	134	+4.3%	5.4	54	+16.6%	44	+3.2%
1954	242	+42.4%	155	+16.0%	4.4	74	+36.9%	49	+11.6%
1955	256	+5.8%	179	+15.4%	4.8	74	-0.0%	53	+9.1%
1956	220	-13.9%	183	+2.2%	5.7	62	-16.5%	53	-0.8%
1957	205	-7.0%	188	+2.8%	6.3	55	-11.1%	52	-1.7%
1958	289	+41.1%	202	+7.5%	4.8	76	+38.5%	55	+5.5%
1959	432	+49.5%	227	+12.1%	3.6	113	+49.5%	61	+12.1%
1960	421	-2.6%	276	+21.7%	4.5	108	-4.4%	73	+19.5%
1961	409	-3.0%	286	+3.5%	4.8	101	-7.0%	73	-0.8%
1962	391	-4.4%	285	-0.4%	5.0	94	-6.9%	71	-3.0%
1963	450	+15.2%	266	-6.5%	4.1	106	+13.1%	65	-8.2%
1964	405	-10.0%	303	+13.7%	5.1	91	-14.2%	70	+8.5%
1965	428	+5.9%	326	+7.7%	5.2	92	+1.3%	73	+3.1%
1966	389	-9.3%	328	+0.5%	5.8	81	-12.5%	70	-3.1%
1967	500	+28.7%	319	-2.5%	4.4	101	+25.6%	67	-4.8%
1968	718	+43.5%	339	+6.1%	3.2	137	+35.4%	67	+0.2%
1969	609	-15.2%	342	+0.8%	3.9	111	-19.0%	65	-3.7%
1970	563	-7.5%	360	+5.5%	4.4	95	-14.3%	63	-2.3%
1971	799	+41.9%	379	+5.1%	3.3	124	+30.2%	61	-3.6%
1972	901	+12.8%	414	+9.3%	3.2	130	+4.8%	62	+1.6%
1973	619	-31.4%	430	+3.9%	4.8	81	-37.9%	58	-6.0%
1974	276	-55.3%	472	+9.6%	11.7	30	-62.5%	53	-8.0%
1975	653	+136.3%	521	+10.4%	5.5	57	+89.2%	47	-11.6%
1976	628	-3.9%	588	+12.8%	6.4	48	-16.5%	46	-2.0%
1977	886	+41.2%	682	+16.1%	5.3	60	+25.9%	48	+3.5%
1978	910	+2.7%	768	+12.6%	5.8	57	-5.3%	50	+3.9%
1979	949	+4.3%	951	+23.8%	6.9	51	-11.0%	53	+5.6%
1980	1206	+27.1%	1073	+12.8%	6.1	56	+10.4%	52	-2.0%
1981	1294	+7.2%	1111	+3.5%	5.9	54	-4.3%	48	-7.6%
1982	1579	+22.1%	1211	+9.0%	5.3	62	+15.8%	49	+3.4%
1983	1944	+23.1%	1309	+8.1%	4.6	73	+16.9%	51	+2.7%
1984	2450	+26.0%	1578	+20.6%	4.4	88	+20.5%	58	+15.3%
1985	2822	+15.2%	1781	+12.8%	4.3	95	+9.0%	62	+6.8%
1986	3452	+22.3%	2033	+14.1%	4.0	112	+17.9%	68	+10.0%
1987	3596	+4.2%	2264	+11.4%	4.3	113	+0.4%	74	+7.4%
1988	3829	+6.5%	2628	+16.1%	4.7	113	-0.3%	80	+8.7%
1989	4978	+30.0%	3076	+17.0%	4.2	136	+20.7%	87	+8.7%
1990	4265	-14.3%	3401	+10.5%	5.5	107	-21.6%	88	+1.1%
1991	4907	+15.1%	3591	+5.6%	5.0	117	+10.1%	89	+1.1%
1992	5635	+14.8%	3573	-0.5%	4.4	131	+11.9%	86	-3.0%
1993	6951	+23.3%	3414	-4.4%	3.4	159	+21.0%	81	-6.2%
1994	6286	-9.6%	3684	+7.9%	4.0	140	-12.1%	85	+4.9%
1995	7450	+18.5%	4127	+12.0%	3.8	161	+14.8%	92	+8.5%
1996	8320	+11.7%	4536	+9.9%	3.7	175	+9.0%	99	+7.3%
1997	9962	+19.7%	4690	+3.4%	3.2	202	+15.5%	98	-0.2%
1998	11048	+10.9%	4026	-14.2%	2.5	218	+7.9%	82	-16.5%
1999	13396	+21.2%	4140	+2.8%	2.1	260	+19.1%	83	+1.0%
2000	12329	-8.0%	4007	-3.2%	2.2	233	-10.6%	78	-5.9%
2001	10428	-15.4%	3998	-0.2%	2.6	195	-16.0%	77	-0.9%
2002	7825	-25.0%	4049	+1.3%	3.6	142	-27.1%	76	-1.6%
2003	9121	+16.6%	4121	+1.8%	3.1	161	+13.4%	75	-1.0%
2004	9961	+9.2%	4428	+7.5%	3.1	170	+5.5%	78	+3.8%
2005	11764	+18.1%	5058	+14.2%	3.0	197	+15.5%	87	+11.8%
2006	13311	+13.2%	5549	+9.7%	2.9	213	+8.3%	92	+5.0%

Figure 89: Barclays UK Gilt Index

Year	Gilt Price Index December		Yield %	Gilt Price Index Adjusted for Cost of Living	
1899	100.0			100.0	
1900	98.4	-1.6%	2.8	95.2	-4.8%
1901	94.6	-3.8%	2.9	91.5	-3.8%
1902	93.7	-0.9%	3.0	87.8	-4.0%
1903	88.3	-5.8%	2.9	82.8	-5.8%
1904	89.4	+1.2%	2.8	83.8	+1.2%
1905	90.1	+0.8%	2.8	84.4	+0.8%
1906	86.6	-3.8%	2.9	86.6	+2.6%
1907	84.1	-2.9%	3.0	76.5	-11.7%
1908	84.6	+0.6%	3.0	74.7	-2.4%
1909	83.6	-1.3%	3.0	73.7	-1.3%
1910	80.0	-4.3%	3.1	70.6	-4.3%
1911	77.7	-2.8%	3.2	66.6	-5.6%
1912	75.8	-2.4%	3.3	63.2	-5.1%
1913	72.3	-4.7%	3.5	60.2	-4.7%
1914	73.0	+1.0%	3.4	60.9	+1.0%
1915	73.0	0.0	3.4	49.2	-19.1%
1916	55.7	-23.8%	4.5	31.7	-35.7%
1917	54.9	-1.4%	4.6	25.8	-18.4%
1918	59.4	+8.3%	4.2	24.3	-6.0%
1919	51.9	-12.7%	4.8	20.7	-14.6%
1920	45.6	-12.1%	5.5	15.2	-26.5%
1921	50.6	+11.1%	4.9	22.9	+50.2%
1922	56.2	+10.9%	4.4	28.1	+22.6%
1923	56.1	-0.2%	4.5	28.5	+1.5%
1924	57.7	+2.9%	4.3	28.6	+0.6%
1925	55.4	-3.9%	4.5	28.1	-1.7%
1926	54.5	-1.6%	4.6	27.4	-2.7%
1927	55.9	+2.6%	4.5	29.8	+8.7%
1928	56.7	+1.3%	4.4	30.3	+1.9%
1929	53.3	-6.0%	4.7	28.7	-5.4%
1930	57.8	+8.5%	4.3	33.5	+16.9%
1931	55.0	-4.7%	4.5	33.4	-0.2%
1932	74.7	+35.6%	3.3	46.9	+40.4%
1933	74.6	-0.1%	3.3	46.9	-0.1%
1934	92.8	+24.4%	2.7	57.9	+23.5%
1935	87.4	-5.8%	2.9	53.4	-7.8%
1936	85.1	-2.6%	2.9	50.7	-5.2%
1937	74.8	-12.2%	3.3	42.0	-17.1%
1938	70.7	-5.4%	3.5	40.8	-3.0%
1939	68.9	-2.6%	3.6	35.8	-12.2%
1940	77.4	+12.3%	3.2	35.7	-0.3%
1941	83.1	+7.4%	3.0	37.2	+4.2%
1942	82.9	-0.3%	3.0	37.2	+0.2%
1943	80.0	-3.4%	3.1	36.1	-3.0%
1944	82.1	+2.6%	3.0	36.7	+1.6%
1945	91.8	+11.8%	2.7	40.6	+10.7%
1946	99.2	+8.0%	2.5	43.7	+7.5%
1947	82.5	-16.8%	3.0	35.2	-19.4%
1948	80.6	-2.3%	3.1	32.8	-6.9%
1949	70.9	-12.0%	3.5	27.9	-15.0%
1950	71.3	+0.5%	3.5	27.2	-2.6%
1951	61.9	-13.1%	4.0	21.1	-22.4%

Year	Gilt Price Index December		Yield %	Gilt Price Index Adjusted for Cost of Living	
1952	59.0	-4.8%	4.2	18.9	-10.5%
1953	64.7	+9.7%	3.9	20.5	+8.5%
1954	66.1	+2.2%	3.8	20.1	-1.7%
1955	56.9	-13.8%	4.4	16.4	-18.6%
1956	52.7	-7.5%	4.7	14.7	-10.2%
1957	46.9	-10.9%	5.3	12.5	-14.9%
1958	52.4	+11.7%	4.8	13.7	+9.6%
1959	50.4	-3.9%	5.0	13.2	-3.9%
1960	44.3	-11.9%	5.6	11.4	-13.5%
1961	38.3	-13.7%	6.5	9.4	-17.3%
1962	45.3	+18.3%	5.4	10.9	+15.3%
1963	44.5	-1.7%	5.5	10.5	-3.5%
1964	41.0	-7.9%	6.1	9.2	-12.1%
1965	40.3	-1.7%	6.2	8.7	-6.0%
1966	39.5	-2.1%	6.4	8.2	-5.5%
1967	37.9	-4.1%	6.9	7.7	-6.4%
1968	34.4	-9.3%	7.6	6.6	-14.4%
1969	31.7	-7.6%	8.5	5.8	-11.7%
1970	30.1	-5.2%	9.3	5.1	-12.2%
1971	35.4	+17.6%	8.3	5.5	+7.8%
1972	31.0	-12.3%	9.6	4.5	-18.5%
1973	25.3	-18.6%	11.9	3.3	-26.4%
1974	18.3	-27.5%	17.0	2.0	-39.2%
1975	21.8	+19.2%	14.8	1.9	-4.6%
1976	21.6	-1.1%	15.0	1.6	-14.0%
1977	28.2	+30.6%	10.9	1.9	+16.4%
1978	24.4	-13.3%	13.2	1.5	-20.0%
1979	22.2	-9.2%	14.7	1.2	-22.6%
1980	23.5	+6.2%	13.9	1.1	-7.8%
1981	20.7	-12.1%	15.8	0.9	-21.6%
1982	28.2	+36.2%	11.1	1.1	+29.2%
1983	29.5	+4.9%	10.5	1.1	-0.4%
1984	28.5	-3.4%	10.6	1.0	-7.7%
1985	28.7	+0.4%	10.5	1.0	-5.0%
1986	28.8	+0.4%	10.5	0.9	-3.2%
1987	30.6	+6.2%	9.5	1.0	+2.4%
1988	30.6	+0.0%	9.3	0.9	-6.3%
1989	29.4	-3.7%	10.0	0.8	-10.6%
1990	28.1	-4.5%	10.6	0.7	-12.7%
1991	30.4	+8.0%	9.8	0.7	+3.4%
1992	33.0	+8.7%	8.7	0.8	+6.0%
1993	39.4	+19.3%	6.4	0.9	+17.1%
1994	32.2	-18.1%	8.6	0.7	-20.4%
1995	35.5	+10.3%	7.6	0.8	+6.8%
1996	35.7	+0.6%	7.6	0.8	-1.8%
1997	40.0	+11.8%	6.3	0.8	+7.9%
1998	47.4	+18.6%	4.4	0.9	+15.4%
1999	43.4	-8.4%	5.3	0.8	-10.0%
2000	45.2	+4.0%	4.7	0.9	+1.0%
2001	43.4	-3.8%	5.0	0.8	-4.5%
2002	45.5	+4.8%	4.4	0.8	+1.8%
2003	44.1	-3.2%	4.7	0.8	-5.8%
2004	45.2	+2.5%	4.5	0.8	-1.0%
2005	47.0	+3.9%	4.1	0.8	+1.7%
2006	44.8	-4.6%	4.7	0.7	-8.6%

Figure 90: Barclays UK Treasury Bill Index

Year	Treasury Bill Index December		Treasury Bill Index Adjusted for Cost of Living	
1899	100		100	
1900	104	+4.0%	101	+0.6%
1901	107	+2.5%	103	+2.5%
1902	110	+3.0%	103	-0.3%
1903	114	+3.4%	106	+3.4%
1904	117	+2.9%	110	+2.9%
1905	119	+2.2%	112	+2.2%
1906	123	+3.0%	123	+9.9%
1907	128	+3.8%	116	-5.7%
1908	130	+2.2%	115	-0.8%
1909	133	+2.1%	118	+2.1%
1910	137	+3.1%	121	+3.1%
1911	141	+2.8%	121	-0.1%
1912	144	+2.0%	120	-0.8%
1913	148	+3.0%	124	+3.0%
1914	153	+3.0%	127	+3.0%
1915	158	+3.0%	106	-16.6%
1916	162	+3.0%	92	-13.1%
1917	167	+3.0%	79	-14.7%
1918	172	+3.0%	70	-10.5%
1919	179	+3.6%	71	+1.3%
1920	190	+6.5%	64	-11.0%
1921	199	+4.7%	90	+41.5%
1922	204	+2.6%	102	+13.4%
1923	210	+2.7%	107	+4.4%
1924	217	+3.5%	108	+1.2%
1925	226	+4.2%	115	+6.6%
1926	237	+4.6%	119	+3.5%
1927	247	+4.4%	131	+10.5%
1928	257	+4.3%	138	+4.9%
1929	271	+5.4%	146	+6.1%
1930	278	+2.5%	161	+10.5%
1931	289	+3.7%	175	+8.6%
1932	293	+1.5%	184	+5.0%
1933	295	+0.6%	185	+0.6%
1934	297	+0.7%	185	+0.0%
1935	298	+0.5%	182	-1.5%
1936	300	+0.6%	179	-2.1%
1937	302	+0.6%	170	-5.1%
1938	304	+0.6%	175	+3.2%
1939	308	+1.3%	160	-8.6%
1940	311	+1.0%	143	-10.4%
1941	314	+1.0%	140	-2.0%
1942	317	+2.0%	143	+1.5%
1943	320	+1.0%	145	+1.5%
1944	324	+1.0%	145	+0.0%
1945	327	+0.9%	145	-0.1%
1946	328	+0.5%	145	+0.0%
1947	330	+0.5%	141	-2.6%
1948	332	+0.5%	135	-4.2%
1949	333	+0.5%	131	-2.9%
1950	335	+0.5%	128	-2.6%
1951	337	+0.5%	115	-10.3%

Year	Treasury Bill Index December		Treasury Bill Index Adjusted for Cost of Living	
1952	344	+2.1%	110	-4.0%
1953	352	+2.4%	111	+1.3%
1954	359	+1.9%	109	-2.0%
1955	371	+3.5%	107	-2.2%
1956	390	+5.0%	109	+1.9%
1957	409	+5.0%	109	+0.4%
1958	430	+5.1%	113	+3.2%
1959	445	+3.4%	117	+3.4%
1960	467	+5.0%	120	+3.2%
1961	491	+5.1%	121	+0.7%
1962	513	+4.5%	123	+1.8%
1963	533	+3.8%	126	+1.9%
1964	556	+4.4%	125	-0.4%
1965	591	+6.3%	127	+1.7%
1966	627	+6.1%	130	+2.4%
1967	664	+5.9%	135	+3.4%
1968	714	+7.4%	137	+1.4%
1969	770	+7.9%	141	+3.1%
1970	828	+7.5%	140	-0.4%
1971	879	+6.2%	137	-2.6%
1972	927	+5.4%	134	-2.1%
1973	1010	+9.0%	132	-1.4%
1974	1137	+12.6%	125	-5.5%
1975	1259	+10.8%	110	-11.3%
1976	1402	+11.3%	107	-3.2%
1977	1534	+9.4%	104	-2.4%
1978	1658	+8.1%	104	-0.3%
1979	1881	+13.5%	101	-3.2%
1980	2204	+17.2%	102	+1.8%
1981	2507	+13.8%	104	+1.5%
1982	2817	+12.4%	111	+6.6%
1983	3103	+10.1%	116	+4.6%
1984	3399	+9.5%	121	+4.8%
1985	3803	+11.9%	129	+5.8%
1986	4219	+10.9%	137	+7.0%
1987	4624	+9.6%	145	+5.7%
1988	5133	+11.0%	151	+4.0%
1989	5880	+14.6%	161	+6.4%
1990	6812	+15.9%	170	+6.0%
1991	7602	+11.6%	182	+6.8%
1992	8322	+9.5%	194	+6.7%
1993	8810	+5.9%	202	+3.9%
1994	9286	+5.4%	207	+2.4%
1995	9911	+6.7%	214	+3.4%
1996	10522	+6.2%	221	+3.6%
1997	11246	+6.9%	228	+3.1%
1998	12137	+7.9%	240	+5.0%
1999	12805	+5.5%	249	+3.7%
2000	13601	+6.2%	257	+3.2%
2001	14349	+5.5%	269	+4.8%
2002	14939	+4.1%	272	+1.1%
2003	15500	+3.8%	274	+0.9%
2004	16211	+4.6%	277	+1.1%
2005	17022	+5.0%	285	+2.7%
2006	17856	+4.9%	286	+0.4%

Figure 91: Barclays UK Index-linked Gilt Index

Year	Index Linked Gilt Price Index December		Real Yield %	Money Yield %	Index Linked Gilt Price Index Adjusted for Cost of Living	
1982	100		2.7	8.3	100	
1983	98.1	-1.9%	3.2	8.7	93.2	-6.8%
1984	101.6	+3.6%	3.3	8.1	92.3	-1.0%
1985	98.5	-3.1%	3.9	9.8	84.6	-8.3%
1986	101.4	+3.0%	4.1	7.9	84.0	-0.7%
1987	105.1	+3.6%	4.0	7.9	84.0	-0.1%
1988	116.0	+10.4%	3.8	10.8	86.8	+3.3%
1989	129.1	+11.3%	3.5	11.5	89.7	+3.3%
1990	130.8	+1.3%	4.0	13.8	83.1	-7.4%
1991	133.2	+1.8%	4.5	9.2	81.0	-2.5%
1992	151.1	+13.4%	3.9	6.6	89.6	+10.6%
1993	177.1	+17.2%	2.9	4.9	103.0	+15.0%
1994	158.3	-10.6%	4.0	7.0	89.5	-13.1%
1995	171.1	+8.1%	3.6	6.9	93.7	+4.7%
1996	176.2	+3.0%	3.6	6.1	94.2	+0.5%
1997	193.4	+9.8%	3.1	6.9	99.8	+5.9%
1998	227.4	+17.6%	2.0	4.8	114.2	+14.4%
1999	233.7	+2.8%	2.2	4.0	115.3	+1.0%
2000	235.4	+0.8%	2.3	5.3	112.9	-2.1%
2001	227.7	-3.3%	2.7	3.4	108.4	-4.0%
2002	240.7	+5.7%	2.1	5.1	111.3	+2.7%
2003	251.9	+4.7%	1.7	4.5	113.3	+1.8%
2004	267.6	+6.3%	1.7	5.3	116.3	+2.7%
2005	286.7	+7.1%	1.5	3.8	121.9	+4.8%
2006	287.0	+0.1%	1.6	6.0	116.9	-4.1%

Figure 92: Barclays UK Total Sterling Corporate Bond Index

Year	Total Sterling Bond Price Index December		Redemption Yield %	Total Sterling Bond Price Index Adjusted for Cost of Living	
1990	100		11.8	100	
1991	107.7	+7.7%	10.6	103.1	+3.1%
1992	116.8	+8.4%	9.1	109.0	+5.7%
1993	133.2	+14.1%	6.8	122.0	+12.0%
1994	115.0	-13.7%	9.3	102.3	-16.1%
1995	123.4	+7.3%	8.0	106.4	+4.0%
1996	123.4	-0.0%	8.0	103.8	-2.4%
1997	130.7	+5.9%	7.0	106.1	+2.2%
1998	141.4	+8.2%	5.6	111.8	+5.3%
1999	131.8	-6.8%	6.5	102.4	-8.4%
2000	135.8	+3.0%	5.9	102.5	+0.1%
2001	135.8	+0.0%	5.9	101.8	-0.7%
2002	140.4	+3.4%	5.4	102.2	+0.4%
2003	140.5	+0.0%	5.3	99.5	-2.7%
2004	141.5	+0.8%	5.2	96.9	-2.6%
2005	146.6	+3.6%	4.7	98.2	+1.4%
2006	140.3	-4.3%	5.2	89.9	-8.4%

Figure 93: Barclays UK Equity, Gilt and Treasury Bill Funds

	Equities				Gilts				Treasury Bills			
	Value of Fund December £		Adjusted for Cost of Living		Value of Fund December£		Adjusted for Cost of Living		Value of Fund December £		Adjusted for Cost of Living	
1945	100		100		100		100		100		100	
1946	118	+17.9%	117	+17.3%	111	+10.7%	110	+10.2%	101	+0.5%	100	+0.0%
1947	115	-2.3%	111	-5.3%	95	-14.3%	92	-16.9%	101	+0.5%	97	-2.6%
1948	111	-3.8%	102	-8.3%	96	+0.7%	88	-4.0%	102	+0.5%	93	-4.2%
1949	104	-5.8%	93	-8.9%	87	-8.9%	77	-12.0%	102	+0.5%	91	-2.9%
1950	116	+10.9%	100	+7.4%	91	+4.0%	78	+0.8%	103	+0.5%	88	-2.6%
1951	126	+8.5%	97	-3.1%	82	-9.6%	63	-19.3%	103	+0.5%	79	-10.3%
1952	126	-0.1%	91	-6.1%	81	-0.8%	59	-6.7%	105	+2.1%	76	-4.0%
1953	156	+24.2%	111	+22.9%	93	+14.0%	66	+12.8%	108	+2.4%	77	+1.3%
1954	232	+48.6%	159	+42.9%	98	+6.1%	67	+2.0%	110	+1.9%	75	-2.0%
1955	257	+10.9%	167	+4.8%	88	-10.1%	57	-15.0%	114	+3.5%	74	-2.2%
1956	234	-9.0%	147	-11.7%	85	-3.2%	54	-6.0%	119	+5.0%	75	+1.9%
1957	231	-1.1%	139	-5.5%	80	-6.2%	48	-10.4%	125	+5.0%	75	+0.4%
1958	342	+47.9%	202	+45.2%	94	+17.0%	55	+14.9%	132	+5.1%	78	+3.2%
1959	529	+54.8%	313	+54.8%	95	+0.9%	56	+0.9%	136	+3.4%	81	+3.4%
1960	539	+1.8%	313	-0.1%	88	-7.0%	51	-8.7%	143	+5.0%	83	+3.2%
1961	548	+1.7%	305	-2.5%	81	-8.1%	45	-11.9%	150	+5.1%	84	+0.7%
1962	550	+0.4%	298	-2.2%	101	+24.7%	55	+21.5%	157	+4.5%	85	+1.8%
1963	659	+19.9%	351	+17.7%	105	+3.7%	56	+1.8%	163	+3.8%	87	+1.9%
1964	623	-5.4%	317	-9.8%	102	-2.3%	52	-6.7%	170	+4.4%	87	-0.4%
1965	694	+11.4%	337	+6.6%	107	+4.4%	52	-0.1%	181	+6.3%	88	+1.7%
1966	666	-4.0%	312	-7.4%	111	+4.2%	52	+0.5%	192	+6.1%	90	+2.4%
1967	895	+34.3%	410	+31.1%	114	+2.6%	52	+0.1%	203	+5.9%	93	+3.4%
1968	1326	+48.1%	573	+39.8%	111	-2.4%	48	-7.8%	219	+7.4%	94	+1.4%
1969	1168	-11.9%	482	-15.9%	112	+0.2%	46	-4.2%	236	+7.9%	97	+3.1%
1970	1127	-3.5%	431	-10.5%	116	+3.6%	44	-4.0%	253	+7.5%	97	-0.4%
1971	1652	+46.5%	579	+34.4%	147	+27.3%	52	+16.8%	269	+6.2%	94	-2.6%
1972	1922	+16.4%	626	+8.1%	142	-3.8%	46	-10.7%	284	+5.4%	92	-2.1%
1973	1382	-28.1%	407	-35.0%	129	-8.9%	38	-17.6%	309	+9.0%	91	-1.4%
1974	690	-50.1%	171	-58.1%	109	-15.2%	27	-28.8%	348	+12.6%	86	-5.5%
1975	1719	+149.3%	341	+99.6%	150	+36.8%	30	+9.5%	386	+10.8%	76	-11.3%
1976	1759	+2.3%	303	-11.1%	170	+13.7%	29	-1.1%	429	+11.3%	74	-3.2%
1977	2614	+48.6%	401	+32.5%	247	+44.8%	38	+29.1%	470	+9.4%	72	-2.4%
1978	2839	+8.6%	402	+0.2%	242	-1.8%	34	-9.4%	508	+8.1%	72	-0.3%
1979	3165	+11.5%	382	-4.9%	252	+4.1%	30	-11.2%	576	+13.5%	70	-3.2%
1980	4268	+34.8%	448	+17.1%	305	+20.9%	32	+5.0%	675	+17.2%	71	+1.8%
1981	4846	+13.6%	454	+1.3%	310	+1.8%	29	-9.2%	768	+13.8%	72	+1.5%
1982	6227	+28.5%	553	+21.9%	469	+51.3%	42	+43.6%	863	+12.4%	77	+6.6%
1983	8019	+28.8%	676	+22.3%	544	+15.9%	46	+10.0%	950	+10.1%	80	+4.6%
1984	10552	+31.6%	851	+25.8%	581	+6.8%	47	+2.1%	1041	+9.6%	84	+4.8%
1985	12680	+20.2%	968	+13.7%	644	+11.0%	49	+5.0%	1165	+11.9%	89	+5.8%
1986	16139	+27.3%	1188	+22.7%	715	+11.0%	53	+7.0%	1292	+10.9%	95	+7.0%
1987	17536	+8.7%	1244	+4.8%	831	+16.3%	59	+12.1%	1416	+9.6%	100	+5.7%
1988	19552	+11.5%	1299	+4.4%	909	+9.4%	60	+2.4%	1572	+11.0%	104	+4.0%
1989	26498	+35.5%	1635	+25.8%	963	+5.9%	59	-1.7%	1801	+14.6%	111	+6.4%

	Equities				Gilts				Treasury Bills			
	Value of Fund December £		Adjusted for Cost of Living		Value of Fund December£		Adjusted for Cost of Living		Value of Fund December £		Adjusted for Cost of Living	
1990	23947	-9.6%	1351	-17.4%	1017	+5.6%	57	-3.4%	2086	+15.9%	118	+6.0%
1991	28936	+20.8%	1563	+15.7%	1209	+18.9%	65	+13.8%	2328	+11.6%	126	+6.8%
1992	34672	+19.8%	1826	+16.8%	1432	+18.4%	75	+15.4%	2549	+9.5%	134	+6.7%
1993	44207	+27.5%	2285	+25.1%	1844	+28.8%	95	+26.4%	2698	+5.9%	139	+3.9%
1994	41590	-5.9%	2089	-8.6%	1635	-11.3%	82	-13.8%	2844	+5.4%	143	+2.4%
1995	51163	+23.0%	2490	+19.2%	1945	+19.0%	95	+15.3%	3035	+6.7%	148	+3.4%
1996	59275	+15.9%	2815	+13.1%	2095	+7.7%	100	+5.1%	3222	+6.2%	153	+3.6%
1997	73263	+23.6%	3358	+19.3%	2503	+19.4%	115	+15.3%	3444	+6.9%	158	+3.1%
1998	83284	+13.7%	3715	+10.6%	3129	+25.0%	140	+21.7%	3717	+7.9%	166	+5.0%
1999	103120	+23.8%	4520	+21.7%	3018	-3.5%	132	-5.2%	3921	+5.5%	172	+3.7%
2000	97023	-5.9%	4132	-8.6%	3296	+9.2%	140	+6.1%	4165	+6.2%	177	+3.2%
2001	84226	-13.2%	3562	-13.8%	3340	+1.3%	141	+0.6%	4394	+5.5%	186	+4.8%
2002	65440	-22.3%	2689	-24.5%	3668	+9.8%	151	+6.7%	4575	+4.1%	188	+1.1%
2003	78643	+20.2%	3143	+16.9%	3725	+1.6%	149	-1.2%	4747	+3.8%	190	+0.9%
2004	88508	+12.5%	3418	+8.8%	3994	+7.2%	154	+3.6%	4964	+4.6%	192	+1.1%
2005	107609	+21.6%	4066	+18.9%	4329	+8.4%	164	+6.0%	5213	+5.0%	197	+2.7%
2006	125243	+16.4%	4531	+11.4%	4323	-0.1%	156	-4.4%	5468	+4.9%	198	+0.4%

Note: Original Investment of £100 December 1945, gross income reinvested.

Figure 94: Barclays UK Treasury Bills and Building Society Accounts

	Treasury Bills Annual Return %	Building Society Acc. Annual Rate of Interest	Basic Rate Income Tax Calendar Year Average		Treasury Bills Annual Return %	Building Society Acc. Annual rate of Interest	Basic Rate Income Tax Calendar Year Average
1946	0.51	6.51	46.25	**1976**	11.34	10.65	35.00
1947	0.51	6.36	45.00	**1977**	9.44	10.65	34.25
1948	0.51	6.36	45.00	**1978**	8.06	9.42	33.25
1949	0.52	6.36	45.00	**1979**	13.45	12.22	30.75
1950	0.52	6.36	45.00	**1980**	17.17	15.00	30.00
1951	0.52	4.82	46.88	**1981**	13.76	12.94	30.00
1952	2.09	4.65	47.50	**1982**	12.38	12.19	30.00
1953	2.36	4.60	45.62	**1983**	10.14	9.64	30.00
1954	1.89	4.55	45.00	**1984**	9.55	9.99	30.00
1955	3.50	4.69	43.12	**1985**	11.87	10.81	30.00
1956	5.02	5.44	42.50	**1986**	10.95	10.55	29.26
1957	5.01	6.09	42.50	**1987**	9.58	9.66	27.50
1958	5.11	6.09	42.50	**1988**	11.01	8.26	25.50
1959	3.42	5.59	39.69	**1989**	14.55	10.71	25.00
1960	5.04	5.52	38.75	**1990**	15.86	12.04	25.00
1961	5.14	5.81	38.75	**1991**	11.59	9.32	25.00
1962	4.46	6.12	38.75	**1992**	9.47	9.59	24.68
1963	3.80	5.81	38.75	**1993**	5.86	4.12	24.50
1964	4.40	5.71	38.75	**1994**	5.40	3.69	20.00
1965	6.29	6.50	40.62	**1995**	6.74	3.93	20.00
1966	6.12	6.81	41.25	**1996**	6.16	2.61	20.00
1967	5.90	7.23	41.25	**1997**	6.88	3.06	20.00
1968	7.43	7.52	41.25	**1998**	7.92	7.06	20.00
1969	7.93	8.29	41.25	**1999**	5.51	5.11	23.00
1970	7.45	8.51	41.25	**2000**	6.22	5.50	22.00
1971	6.18	8.25	39.38	**2001**	5.50	4.70	22.00
1972	5.42	8.16	38.75	**2002**	4.12	3.40	22.00
1973	9.01	9.70	32.19	**2003**	3.75	3.33	22.00
1974	12.56	11.07	32.25	**2004**	4.59	4.21	22.00
1975	10.75	11.01	34.50	**2005**	5.00	3.95	22.00
				2006	4.90	4.36	22.00

Notes:
1. Annual returns on treasury bills is based on four consecutive investments in 91-day bills.
2. The building society rate of interest above is gross of tax.

Figure 95: Barclays Index-linked and Corporate Bond Funds

	Index Linked gilts				Sterling Corporate Bonds			
	Value of Fund December £		Adjusted for Cost of Living		Value of Fund December £		Adjusted for Cost of Living	
1982	100		100					
1983	101	+0.8%	96	-4.3%				
1984	107	+6.6%	98	+1.9%				
1985	107	-0.2%	92	-5.5%				
1986	114	+6.1%	94	+2.3%				
1987	122	+6.9%	97	+3.1%				
1988	138	+13.7%	103	+6.5%				
1989	158	+14.5%	110	+6.3%				
1990	165	+4.4%	105	-4.5%	100		100	
1991	174	+5.2%	106	+0.7%	122	+22.4%	117	+17.1%
1992	204	+17.1%	121	+14.1%	147	+20.3%	137	+17.3%
1993	247	+21.1%	144	+18.9%	204	+38.4%	187	+35.9%
1994	227	-7.9%	128	-10.5%	183	-10.0%	163	-12.5%
1995	254	+12.0%	139	+8.5%	215	+17.4%	186	+13.7%
1996	271	+6.5%	145	+4.0%	240	+11.6%	202	+8.9%
1997	307	+13.4%	158	+9.4%	296	+23.4%	241	+19.1%
1998	369	+20.3%	186	+17.1%	364	+22.7%	288	+19.5%
1999	388	+5.0%	191	+3.2%	362	-0.6%	281	-2.3%
2000	400	+3.1%	192	+0.1%	393	+8.6%	296	+5.5%
2001	396	-0.9%	189	-1.6%	421	+7.2%	316	+6.5%
2002	428	+8.2%	198	+5.1%	459	+9.1%	334	+6.0%
2003	457	+6.8%	206	+3.9%	504	+9.7%	357	+6.7%
2004	497	+8.6%	216	+4.9%	538	+6.9%	368	+3.3%
2005	542	+9.1%	231	+6.7%	604	+12.2%	404	+9.8%
2006	554	+2.3%	226	-2.1%	603	-0.3%	386	-4.5%

Figure 96: Barclays US Equity Index

Year	Equity Price Index December		Equity Income Index December		Income Yield %	Equity Price Index Adjusted for Cost of Living		Equity Income Index Adjusted for Cost of Living	
1925	100					100			
1926	104	+4.0%	100		5.6	105	+5.2%	100	
1927	132	+27.1%	142	+42.3%	6.3	137	+30.0%	145.6089	+45.6%
1928	176	+33.5%	162	+13.7%	5.3	185	+35.1%	167.4343	+15.0%
1929	145	-17.8%	79	-51.4%	3.2	151	-18.3%	80.86848	-51.7%
1930	99	-31.9%	56	-28.9%	3.3	110	-27.2%	61.41282	-24.1%
1931	52	-47.7%	29	-48.5%	3.3	63	-42.4%	34.90812	-43.2%
1932	44	-15.4%	45	+56.3%	6.0	60	-5.7%	60.81674	+74.2%
1933	66	+51.3%	73	+61.8%	6.4	90	+50.2%	97.67563	+60.6%
1934	66	+0.0%	48	-34.7%	4.2	88	-1.5%	62.80398	-35.7%
1935	92	+38.8%	92	+93.7%	5.8	119	+34.8%	118.1321	+88.1%
1936	116	+26.9%	114	+23.3%	5.7	149	+25.1%	143.5295	+21.5%
1937	72	-38.1%	43	-62.1%	3.5	90	-39.8%	52.91273	-63.1%
1938	88	+22.7%	82	+91.3%	5.4	113	+26.3%	104.1232	+96.8%
1939	86	-2.8%	70	-14.7%	4.8	110	-2.8%	88.77239	-14.7%
1940	75	-12.7%	68	-3.8%	5.2	95	-13.3%	84.78751	-4.5%
1941	63	-15.7%	66	-2.0%	6.1	73	-23.3%	75.54953	-10.9%
1942	69	+8.5%	90	+35.9%	7.6	73	-0.5%	94.16578	+24.6%
1943	84	+21.8%	92	+2.1%	6.4	86	+18.3%	93.34229	-0.9%
1944	97	+15.5%	98	+6.3%	5.9	97	+12.9%	97.0002	+3.9%
1945	128	+32.9%	122	+24.6%	5.5	126	+30.0%	118.1846	+21.8%
1946	116	-9.7%	76	-37.5%	3.8	96	-23.6%	62.54816	-47.1%
1947	113	-2.2%	109	+43.3%	5.6	87	-10.2%	82.32676	+31.6%
1948	109	-3.9%	117	+7.0%	6.2	81	-6.7%	85.5678	+3.9%
1949	122	+12.3%	167	+43.7%	8.0	93	+14.6%	125.6061	+46.8%
1950	148	+21.2%	221	+31.9%	8.7	106	+14.4%	156.4511	+24.6%
1951	169	+14.2%	194	-12.4%	6.7	114	+7.7%	129.3421	-17.3%
1952	182	+7.4%	185	-4.4%	5.9	122	+6.6%	122.7073	-5.1%
1953	172	-5.1%	160	-13.6%	5.4	115	-5.8%	105.2465	-14.2%
1954	247	+43.2%	299	+86.8%	7.1	165	+44.3%	198.1194	+88.2%
1955	297	+20.3%	256	-14.4%	5.0	198	+19.8%	168.9608	-14.7%
1956	310	+4.3%	223	-12.8%	4.2	201	+1.3%	143.1421	-15.3%
1957	266	-14.1%	170	-23.8%	3.7	168	-16.5%	105.9732	-26.0%
1958	370	+39.3%	351	+106.2%	5.5	229	+36.9%	214.7285	+102.6%
1959	404	+9.0%	248	-29.3%	3.6	246	+7.1%	149.297	-30.5%
1960	395	-2.2%	230	-7.2%	3.4	237	-3.5%	136.6705	-8.5%
1961	486	+23.3%	310	+34.8%	3.7	290	+22.4%	183.068	+33.9%
1962	422	-13.3%	216	-30.5%	3.0	248	-14.4%	125.5253	-31.4%
1963	494	+17.1%	321	+48.9%	3.8	286	+15.2%	183.8893	+46.5%
1964	557	+12.8%	330	+2.9%	3.5	320	+11.8%	187.4387	+1.9%
1965	619	+11.0%	360	+9.0%	3.4	348	+8.9%	200.4217	+6.9%
1966	547	-11.7%	281	-22.1%	3.0	297	-14.6%	150.9648	-24.7%
1967	682	+24.7%	449	+60.1%	3.8	360	+21.0%	234.4999	+55.3%
1968	756	+10.9%	421	-6.2%	3.2	381	+5.9%	210.0573	-10.4%
1969	654	-13.5%	300	-28.8%	2.7	310	-18.6%	140.878	-32.9%

Year	Equity Price Index December		Equity Income Index December		Income Yield %	Equity Price Index Adjusted for Cost of Living		Equity Income Index Adjusted for Cost of Living	
1970	632	-3.4%	377	+25.6%	3.5	284	-8.5%	167.6676	+19.0%
1971	713	+12.8%	414	+9.7%	3.4	310	+9.2%	178.1692	+6.3%
1972	814	+14.3%	431	+4.1%	3.1	343	+10.5%	179.4298	+0.7%
1973	642	-21.2%	267	-38.0%	2.4	249	-27.5%	102.2718	-43.0%
1974	442	-31.1%	237	-11.3%	3.1	153	-38.6%	80.74978	-21.0%
1975	583	+31.8%	554	+134.0%	5.5	188	+23.3%	176.7312	+118.9%
1976	711	+21.9%	592	+6.8%	4.9	219	+16.3%	180.0172	+1.9%
1977	659	-7.3%	489	-17.5%	4.3	190	-13.1%	139.2653	-22.6%
1978	681	+3.3%	614	+25.6%	5.3	180	-5.3%	160.4196	+15.2%
1979	805	+18.3%	846	+37.8%	6.1	188	+4.4%	195.1555	+21.7%
1980	1023	+27.1%	1073	+26.9%	6.1	212	+13.0%	220.1058	+12.8%
1981	938	-8.4%	703	-34.5%	4.4	179	-15.9%	132.4277	-39.8%
1982	1072	+14.2%	1136	+61.5%	6.2	197	+10.0%	205.9271	+55.5%
1983	1263	+17.9%	1032	-9.1%	4.8	223	+13.6%	180.3626	-12.4%
1984	1249	-1.1%	923	-10.5%	4.3	212	-4.9%	155.2309	-13.9%
1985	1579	+26.5%	1341	+45.2%	4.9	259	+21.8%	217.1584	+39.9%
1986	1765	+11.8%	1143	-14.8%	3.8	286	+10.6%	183.0703	-15.7%
1987	1741	-1.4%	952	-16.7%	3.2	270	-5.6%	146.092	-20.2%
1988	1967	+13.0%	1545	+62.2%	4.6	292	+8.2%	226.878	+55.3%
1989	2440	+24.0%	1844	+19.4%	4.4	346	+18.5%	258.8343	+14.1%
1990	2211	-9.4%	1255	-32.0%	3.3	296	-14.6%	165.9898	-35.9%
1991	2866	+29.6%	1972	+57.1%	4.0	372	+25.8%	253.0563	+52.5%
1992	3041	+6.1%	1538	-22.0%	2.9	384	+3.1%	191.8336	-24.2%
1993	3309	+8.8%	1584	+3.0%	2.8	406	+5.9%	192.2562	+0.2%
1994	3200	-3.3%	1387	-12.4%	2.5	383	-5.8%	163.964	-14.7%
1995	4240	+32.5%	2301	+66.0%	3.2	494	+29.2%	265.3797	+61.9%
1996	5035	+18.8%	2082	-9.5%	2.4	568	+14.9%	232.3439	-12.4%
1997	6454	+28.2%	2395	+15.1%	2.2	716	+26.0%	262.8498	+13.1%
1998	7779	+20.5%	2345	-2.1%	1.8	850	+18.6%	253.2508	-3.7%
1999	9618	+23.6%	2670	+13.9%	1.6	1023	+20.4%	280.8318	+10.9%
2000	8462	-12.0%	1420	-46.8%	1.0	870	-14.9%	144.4877	-48.6%
2001	7409	-12.4%	1491	+5.0%	1.2	751	-13.8%	149.3665	+3.4%
2002	5771	-22.1%	1256	-15.8%	1.3	571	-23.9%	122.8626	-17.7%
2003	7548	+30.8%	3051	+143.0%	2.4	733	+28.4%	293.0102	+138.5%
2004	8367	+10.9%	3089	+1.2%	2.2	787	+7.4%	287.2881	-2.0%
2005	8817	+5.4%	2914	-5.7%	1.9	802	+1.9%	262.0621	-8.8%
2006	10025	+13.7%	3701	+27.0%	2.2	889	+10.9%	324.6494	+23.9%

Figure 97: Barclays US Bond Index

Year	Bond Price Index December		yield %	Bond Price Index Adjusted for Cost of Living	
1925	100			100	
1926	104	+3.9%	3.5	105	+5.1%
1927	110	+5.4%	3.2	113	+7.8%
1928	106	-3.1%	3.4	111	-2.0%
1929	106	-0.2%	3.4	110	-0.8%
1930	107	+1.3%	3.3	119	+8.2%
1931	98	-8.5%	4.1	120	+0.9%
1932	111	+12.9%	3.2	151	+25.8%
1933	107	-3.1%	3.4	146	-3.9%
1934	115	+6.8%	2.9	153	+5.2%
1935	117	+2.1%	2.8	152	-0.8%
1936	122	+4.6%	2.6	157	+3.1%
1937	119	-2.5%	2.7	148	-5.2%
1938	123	+2.8%	2.5	157	+5.8%
1939	127	+3.5%	2.3	163	+3.5%
1940	132	+3.8%	1.9	167	+3.0%
1941	131	-1.0%	2.0	151	-10.0%
1942	131	+0.7%	2.4	139	-7.6%
1943	131	-0.4%	2.5	135	-3.3%
1944	131	+0.3%	2.4	132	-1.9%
1945	142	+8.1%	2.0	140	+5.8%
1946	139	-2.4%	2.1	115	-17.4%
1947	132	-4.9%	2.4	101	-12.6%
1948	133	+0.9%	2.4	99	-2.0%
1949	138	+4.0%	2.1	105	+6.2%
1950	135	-2.3%	2.2	97	-7.8%
1951	127	-6.3%	2.7	86	-11.6%
1952	125	-1.4%	2.8	84	-2.1%
1953	126	+0.9%	2.7	84	+0.2%
1954	131	+4.1%	2.6	88	+4.9%
1955	126	-3.6%	3.0	84	-4.0%
1956	115	-9.1%	3.4	75	-11.7%
1957	120	+4.7%	3.2	76	+1.8%
1958	110	-8.4%	3.8	68	-10.0%
1959	103	-6.4%	4.4	63	-8.0%
1960	112	+9.0%	3.8	68	+7.5%
1961	109	-3.4%	4.0	65	-4.0%
1962	113	+4.0%	3.8	67	+2.6%
1963	108	-4.3%	4.1	63	-5.8%
1964	109	+0.4%	4.1	62	-0.6%
1965	104	-3.9%	4.4	59	-5.7%
1966	104	+0.0%	4.5	57	-3.3%
1967	94	-9.9%	5.2	50	-12.6%
1968	89	-14.9%	5.7	45	-21.1%
1969	79	-11.1%	6.6	37	-16.3%

Year	Bond Price Index December		yield %	Bond Price Index Adjusted for Cost of Living	
1970	85	+7.0%	6.2	38	+1.4%
1971	95	+12.2%	4.5	41	+8.6%
1972	96	+1.3%	4.5	40	-2.1%
1973	88	-8.8%	7.1	34	-16.1%
1974	84	-3.8%	7.7	29	-14.4%
1975	83	-1.7%	7.7	27	-8.0%
1976	91	+9.8%	6.9	28	+4.7%
1977	86	-6.0%	7.5	25	-11.9%
1978	77	-10.3%	8.8	20	-17.7%
1979	69	-10.0%	9.9	16	-20.5%
1980	60	-13.3%	11.6	12	-22.9%
1981	53	-11.5%	13.7	10	-18.7%
1982	65	+23.3%	10.5	12	+18.8%
1983	59	-9.4%	11.6	10	-12.7%
1984	61	+2.5%	11.3	10	-1.4%
1985	72	+18.7%	9.3	12	+14.3%
1986	84	+16.1%	7.6	14	+14.8%
1987	75	-11.0%	8.8	12	-14.8%
1988	74	-0.6%	8.8	11	-4.8%
1989	81	+9.5%	7.9	12	+4.6%
1990	79	-2.8%	8.2	11	-8.4%
1991	86	+9.1%	7.3	11	+5.9%
1992	86	-0.3%	7.3	11	-3.1%
1993	93	+8.8%	6.4	11	+5.9%
1994	80	-14.3%	7.9	10	-16.5%
1995	97	+21.1%	5.9	11	+18.1%
1996	90	-7.0%	6.6	10	-10.0%
1997	97	+7.7%	5.9	11	+5.9%
1998	103	+6.1%	5.3	11	+4.4%
1999	88	-14.5%	6.7	9	-16.8%
2000	100	+13.3%	5.5	10	+9.6%
2001	98	-2.1%	5.7	10	-3.6%
2002	108	+10.5%	4.8	11	+7.9%
2003	105	-2.9%	5.0	10	-4.7%
2004	107	+2.4%	4.8	10	-0.8%
2005	110	+2.2%	4.6	10	-1.2%
2006	105	-4.1%	4.8	9	-6.5%

Figure 98: Barclays US Treasury Bill Index

Year	Treasury Bill Index December		Treasury Bill Index Adjusted for Cost of Living	
1925	100		100	
1926	103	+3.2%	104	+4.4%
1927	106	+3.1%	110	+5.5%
1928	110	+3.8%	116	+5.0%
1929	116	+4.7%	120	+4.1%
1930	118	+2.3%	132	+9.3%
1931	120	+1.0%	147	+11.4%
1932	121	+0.8%	165	+12.3%
1933	121	+0.3%	164	-0.5%
1934	121	+0.2%	162	-1.3%
1935	121	+0.2%	157	-2.7%
1936	122	+0.2%	155	-1.3%
1937	122	+0.3%	152	-2.5%
1938	122	+0.0%	156	+2.9%
1939	122	+0.0%	156	+0.0%
1940	122	-0.1%	155	-0.8%
1941	122	+0.0%	141	-9.0%
1942	122	+0.3%	130	-8.0%
1943	123	+0.3%	126	-2.5%
1944	123	+0.3%	124	-1.9%
1945	124	+0.3%	121	-1.9%
1946	124	+0.4%	103	-15.1%
1947	125	+0.5%	95	-7.7%
1948	126	+1.0%	93	-2.0%
1949	127	+1.1%	96	+3.2%
1950	129	+1.2%	92	-4.5%
1951	131	+1.5%	88	-4.3%
1952	133	+1.6%	89	+0.9%
1953	135	+1.8%	90	+1.0%
1954	136	+0.9%	91	+1.6%
1955	138	+1.6%	92	+1.2%
1956	142	+2.4%	92	-0.5%
1957	146	+3.1%	92	+0.2%
1958	148	+1.4%	92	-0.3%
1959	152	+2.8%	93	+1.1%
1960	156	+2.6%	94	+1.2%
1961	160	+2.2%	95	+1.5%
1962	164	+2.7%	97	+1.4%
1963	169	+3.2%	98	+1.5%
1964	175	+3.5%	101	+2.5%
1965	182	+4.0%	103	+2.0%
1966	191	+4.7%	104	+1.2%
1967	199	+4.1%	105	+1.1%
1968	209	+9.7%	105	+0.5%
1969	223	+6.6%	106	+0.4%

Year	Treasury Bill Index December		Treasury Bill Index Adjusted for Cost of Living	
1970	237	+6.4%	107	+0.8%
1971	247	+4.3%	108	+1.0%
1972	257	+3.9%	108	+0.5%
1973	275	+7.1%	107	-1.5%
1974	297	+8.1%	103	-3.8%
1975	315	+5.8%	102	-1.0%
1976	331	+5.2%	102	+0.3%
1977	348	+5.2%	100	-1.5%
1978	373	+7.3%	99	-1.6%
1979	413	+10.7%	96	-2.3%
1980	461	+11.5%	96	-0.9%
1981	529	+14.9%	101	+5.4%
1982	586	+10.7%	107	+6.6%
1983	638	+8.8%	113	+4.9%
1984	701	+10.0%	119	+5.8%
1985	755	+7.7%	124	+3.7%
1986	801	+6.1%	130	+4.9%
1987	844	+5.4%	131	+0.9%
1988	897	+6.3%	133	+1.8%
1989	971	+8.2%	138	+3.4%
1990	1046	+7.7%	140	+1.5%
1991	1103	+5.5%	143	+2.4%
1992	1141	+3.4%	144	+0.5%
1993	1174	+2.9%	144	+0.1%
1994	1219	+3.9%	146	+1.2%
1995	1287	+5.5%	150	+2.9%
1996	1353	+5.1%	153	+1.8%
1997	1422	+5.1%	158	+3.3%
1998	1490	+4.8%	163	+3.1%
1999	1558	+4.6%	166	+1.8%
2000	1647	+5.8%	169	+2.3%
2001	1710	+3.8%	173	+2.2%
2002	1738	+1.6%	172	-0.7%
2003	1755	+1.0%	170	-0.8%
2004	1776	+1.2%	167	-2.0%
2005	1829	+3.0%	166	-0.4%
2006	1916	+4.8%	170	+2.2%

Chapter 9 – Total investment returns

Sree Kochugovindan, Roland Nilsson

Our final chapter presents a series of tables showing the performance of equity and fixed-interest investments over any period of years since December 1899.

The first section reviews the performance of each asset class taking account of inflation. The second section reviews the performance over the past 46 years since December 1960. On each page we provide two tables illustrating the same information in alternative forms. The first table shows the average annual real rate of return; the second shows the real value of a portfolio at the end of each year, which includes reinvested income. This section provides data on equities and gilts, with dividend income reinvested gross. Lastly, we provide figures for Treasury bills and building society shares.

The final pullout section provides the annual real rate of return on both UK and US equities and bonds (with reinvestment of income for each year since 1899 for the UK, and 1925 for the US). There is also a table showing the real capital value of equities for the UK.

1960-2006

- Equities – income gross
- Gilts – income gross
- Treasury Bills – income gross
- Building Society Shares – income gross
- Index-linked gilts
- Corporate bonds

UK: 1899-2006
US: 1925-2006

- UK and US real bond returns – income gross
- UK and US real equities returns – income gross
- UK Equities – real capital value

REAL RETURN ON EQUITIES - GROSS INCOME RE-INVESTED
AVERAGE ANNUAL REAL RATE OF RETURN

INVESTMENT FROM END YEAR

INVESTMENT TO END YEAR

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1961	(2.5)																						
1962	(2.4)	(2.2)																					
1963	3.9	7.3	17.7																				
1964	0.3	1.3	3.0	(9.8)																			
1965	1.5	2.6	4.2	(1.9)	6.6																		
1966	(0.0)	0.5	1.2	(3.8)	(0.7)	(7.4)																	
1967	3.9	5.0	6.6	3.9	9.0	10.2	31.1																
1968	7.8	9.4	11.5	10.3	16.0	19.3	35.4	39.8															
1969	4.9	5.9	7.1	5.4	8.8	9.3	15.5	8.5	(15.9)														
1970	3.3	3.9	4.7	3.0	5.3	5.0	8.4	1.7	(13.2)	(10.5)													
1971	5.8	6.6	7.7	6.5	9.0	9.4	13.2	9.1	0.4	9.7	34.4												
1972	6.0	6.8	7.7	6.7	8.9	9.2	12.3	8.9	2.3	9.1	20.5	8.1											
1973	2.1	2.4	2.9	1.5	2.8	2.4	3.9	(0.1)	(6.6)	(4.1)	(1.9)	(16.2)	(35.0)										
1974	(4.2)	(4.4)	(4.5)	(6.3)	(6.0)	(7.3)	(7.3)	(11.8)	(18.3)	(18.7)	(20.7)	(33.5)	(47.8)	(58.1)									
1975	0.6	0.8	1.0	(0.2)	0.7	0.1	1.0	(2.3)	(7.2)	(5.6)	(4.6)	(12.4)	(18.4)	(8.6)	99.6								
1976	(0.2)	(0.0)	0.1	(1.1)	(0.4)	(1.0)	(0.3)	(3.3)	(7.7)	(6.4)	(5.7)	(12.2)	(16.6)	(9.4)	33.2	(11.1)							
1977	1.5	1.7	2.0	1.0	1.8	1.5	2.3	(0.2)	(3.9)	(2.3)	(1.0)	(5.9)	(8.5)	(0.4)	33.0	8.5	32.5						
1978	1.4	1.6	1.9	0.9	1.7	1.4	2.1	(0.2)	(3.5)	(2.0)	(0.9)	(5.1)	(7.1)	(0.3)	23.9	5.7	15.2	0.2					
1979	1.1	1.3	1.5	0.5	1.3	0.9	1.6	(0.6)	(3.6)	(2.3)	(1.3)	(5.1)	(6.8)	(1.1)	17.5	2.9	8.1	(2.4)	(4.9)				
1980	1.8	2.0	2.3	1.4	2.2	1.9	2.6	0.7	(2.0)	(0.7)	0.4	(2.8)	(4.1)	1.4	17.4	5.6	10.3	3.7	5.5	17.1			
1981	1.8	2.0	2.2	1.4	2.1	1.9	2.5	0.7	(1.8)	(0.5)	0.5	(2.4)	(3.5)	1.4	15.0	4.9	8.4	3.1	4.1	8.9	1.3		
1982	2.6	2.9	3.1	2.4	3.2	3.0	3.6	2.0	(0.2)	1.1	2.1	(0.4)	(1.2)	3.5	15.8	7.2	10.6	6.6	8.3	13.1	11.1	21.9	
1983	3.4	3.7	4.0	3.3	4.1	3.9	4.6	3.2	1.1	2.5	3.5	1.3	0.7	5.2	16.5	9.0	12.2	9.1	11.0	15.3	14.7	22.1	22.3
1984	4.3	4.6	4.9	4.3	5.1	5.0	5.7	4.4	2.5	3.9	5.0	3.0	2.6	6.9	17.4	10.7	13.8	11.3	13.3	17.4	17.4	23.3	24.0
1985	4.6	4.9	5.3	4.7	5.5	5.4	6.1	4.9	3.1	4.5	5.5	3.7	3.4	7.5	17.1	11.0	13.8	11.6	13.4	16.7	16.7	20.8	20.5
1986	5.3	5.6	5.9	5.4	6.2	6.2	6.9	5.8	4.1	5.4	6.5	4.9	4.7	8.6	17.5	12.0	14.6	12.8	14.5	17.6	17.7	21.2	21.0
1987	5.2	5.6	5.9	5.4	6.1	6.1	6.8	5.7	4.2	5.4	6.4	4.9	4.7	8.3	16.5	11.4	13.7	12.0	13.4	15.9	15.7	18.3	17.6
1988	5.2	5.5	5.8	5.4	6.1	6.0	6.7	5.7	4.2	5.4	6.3	4.9	4.7	8.0	15.6	10.9	12.9	11.3	12.4	14.6	14.2	16.2	15.3
1989	5.9	6.2	6.5	6.1	6.8	6.8	7.5	6.5	5.1	6.3	7.3	5.9	5.8	9.1	16.3	11.9	13.9	12.4	13.6	15.6	15.5	17.4	16.7
1990	5.0	5.3	5.5	5.1	5.7	5.7	6.3	5.3	4.0	5.0	5.9	4.6	4.4	7.3	13.8	9.6	11.3	9.8	10.6	12.2	11.7	12.9	11.8
1991	5.3	5.6	5.9	5.5	6.1	6.1	6.7	5.7	4.5	5.5	6.3	5.1	4.9	7.8	13.9	10.0	11.6	10.2	11.0	12.4	12.0	13.2	12.2
1992	5.7	5.9	6.2	5.9	6.5	6.5	7.0	6.2	5.0	6.0	6.8	5.6	5.5	8.2	14.1	10.4	11.9	10.6	11.4	12.8	12.4	13.5	12.7
1993	6.2	6.5	6.8	6.4	7.1	7.1	7.6	6.8	5.7	6.7	7.5	6.4	6.4	9.0	14.6	11.2	12.6	11.5	12.3	13.6	13.4	14.4	13.8
1994	5.7	6.0	6.3	5.9	6.5	6.5	7.0	6.2	5.1	6.0	6.8	5.7	5.6	8.1	13.3	10.0	11.3	10.2	10.8	12.0	11.6	12.5	11.7
1995	6.1	6.4	6.6	6.3	6.9	6.9	7.4	6.7	5.6	6.5	7.3	6.3	6.2	8.6	13.6	10.5	11.7	10.7	11.3	12.4	12.1	12.9	12.3
1996	6.3	6.6	6.8	6.5	7.1	7.1	7.6	6.9	5.9	6.8	7.5	6.5	6.5	8.8	13.6	10.6	11.8	10.8	11.4	12.5	12.2	12.9	12.3
1997	6.6	6.9	7.2	6.9	7.4	7.4	8.0	7.3	6.3	7.2	7.9	7.0	6.9	9.2	13.8	11.0	12.1	11.2	11.8	12.8	12.6	13.3	12.8
1998	6.7	7.0	7.3	7.0	7.5	7.5	8.0	7.4	6.4	7.3	8.0	7.1	7.1	9.2	13.7	10.9	12.1	11.2	11.8	12.7	12.5	13.2	12.6
1999	7.1	7.4	7.6	7.4	7.9	7.9	8.4	7.8	6.9	7.7	8.4	7.6	7.6	9.7	14.0	11.4	12.5	11.6	12.2	13.1	12.9	13.6	13.2
2000	6.7	6.9	7.2	6.9	7.4	7.4	7.9	7.3	6.4	7.2	7.8	7.0	7.0	9.0	13.0	10.5	11.5	10.7	11.2	12.0	11.8	12.3	11.8
2001	6.1	6.3	6.6	6.3	6.8	6.8	7.2	6.6	5.7	6.5	7.0	6.2	6.2	8.1	11.9	9.4	10.4	9.5	9.9	10.7	10.4	10.9	10.3
2002	5.3	5.5	5.7	5.4	5.8	5.8	6.2	5.5	4.7	5.3	5.9	5.1	5.0	6.7	10.3	8.0	8.8	7.9	8.2	8.8	8.5	8.8	8.2
2003	5.5	5.7	5.9	5.6	6.1	6.0	6.4	5.8	5.0	5.7	6.2	5.4	5.3	7.0	10.6	8.3	9.1	8.2	8.6	9.2	8.8	9.2	8.6
2004	5.6	5.8	6.0	5.7	6.1	6.1	6.5	5.9	5.1	5.8	6.3	5.5	5.4	7.1	10.5	8.3	9.0	8.3	8.6	9.2	8.8	9.2	8.6
2005	5.9	6.1	6.3	6.0	6.4	6.4	6.8	6.2	5.4	6.1	6.6	5.9	5.8	7.5	10.8	8.6	9.4	8.6	8.9	9.5	9.2	9.6	9.1
2006	6.0	6.2	6.4	6.1	6.5	6.5	6.9	6.4	5.6	6.2	6.8	6.1	6.0	7.6	10.8	8.7	9.4	8.7	9.0	9.6	9.3	9.6	9.2
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982

INVESTMENT FROM END YEAR

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1984	25.8																						
1985	19.6	13.7																					
1986	20.6	18.1	22.7																				
1987	16.5	13.5	13.4	4.8																			
1988	13.9	11.2	10.3	4.6	4.4																		
1989	15.8	13.9	14.0	11.2	14.6	25.8																	
1990	10.4	8.0	6.9	3.3	2.8	2.0	(17.4)																
1991	11.0	9.1	8.3	5.6	5.9	6.4	(2.2)	15.7															
1992	11.7	10.0	9.5	7.4	8.0	8.9	3.7	16.2	16.8														
1993	12.9	11.6	11.3	9.8	10.7	11.9	8.7	19.1	20.9	25.1													
1994	10.8	9.4	8.9	7.3	7.7	8.2	5.0	11.5	10.1	7.0	(8.6)												
1995	11.5	10.2	9.9	8.6	9.1	9.7	7.3	13.0	12.3	10.9	4.4	19.2											
1996	11.6	10.5	10.2	9.0	9.5	10.1	8.1	13.0	12.5	11.4	7.2	16.1	13.1										
1997	12.1	11.1	10.9	9.9	10.4	11.1	9.4	13.9	13.6	13.0	10.1	17.1	16.1	19.3									
1998	12.0	11.1	10.9	10.0	10.5	11.1	9.5	13.5	13.2	12.6	10.2	15.5	14.3	14.9	10.6								
1999	12.6	11.8	11.6	10.8	11.3	12.0	10.7	14.4	14.2	13.8	12.0	16.7	16.1	17.1	16.0	21.7							
2000	11.2	10.4	10.2	9.3	9.7	10.1	8.8	11.8	11.4	10.7	8.8	12.0	10.7	10.1	7.2	5.5	(8.6)						
2001	9.7	8.8	8.5	7.6	7.8	8.1	6.7	9.2	8.6	7.7	5.7	7.9	6.2	4.8	1.5	(1.4)	(11.2)	(13.8)					
2002	7.5	6.6	6.2	5.2	5.3	5.3	3.9	5.9	5.1	3.9	1.8	3.2	1.1	(0.8)	(4.3)	(7.8)	(15.9)	(19.3)	(24.5)				
2003	8.0	7.1	6.8	5.9	6.0	6.1	4.8	6.7	6.0	5.1	3.2	4.6	3.0	1.6	(1.1)	(3.3)	(8.7)	(8.7)	(6.1)	16.9			
2004	8.0	7.2	6.9	6.0	6.1	6.2	5.0	6.9	6.2	5.4	3.7	5.0	3.6	2.5	0.3	(1.4)	(5.4)	(4.6)	(1.4)	12.8	8.8		
2005	8.5	7.7	7.4	6.7	6.8	6.9	5.9	7.6	7.1	6.4	4.9	6.2	5.0	4.2	2.4	1.3	(1.8)	(0.3)	3.4	14.8	13.7	18.9	
2006	8.6	7.9	7.6	6.9	7.0	7.2	6.2	7.9	7.4	6.7	5.4	6.7	5.6	4.9	3.4	2.5	0.0	1.5	4.9	13.9	13.0	15.1	11.4
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

The dates along the top (and bottom) are those on which each portfolio starts. Those down the side are the dates to which the annual rate of return is calculated. Reading the top figure in each column diagonally down the table gives the real rate of return in each year since 1960. The table can be used to see the real rate of return over any period; thus a purchase made at the end of 1960 would have lost 2.5% (allowing for reinvestment of income) in one year but over the first three years (up to the end of 1963) would have given an average annual real return of 3.9%. Each figure on the bottom line of the table shows the real growth up to December 2006 from the year shown below the figure.

REAL VALUE OF £100 INVESTED

INVESTMENT TO END YEAR

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1961	97																						
1962	95	98																					
1963	112	115	118																				
1964	101	104	106	90																			
1965	108	111	113	96	107																		
1966	100	102	105	89	99	93																	
1967	131	134	137	117	129	121	131																
1968	183	188	192	163	181	170	183	140															
1969	154	158	162	137	152	143	154	118	84														
1970	138	141	145	123	136	128	138	105	75	89													
1971	185	190	194	165	183	172	185	141	101	120	134												
1972	200	205	210	179	198	186	201	153	109	130	145	108											
1973	130	134	137	116	129	121	130	99	71	85	94	70	65										
1974	55	56	57	49	54	51	55	42	30	35	40	29	27	42									
1975	109	112	114	97	108	101	109	83	59	71	79	59	54	84	200								
1976	97	99	102	86	96	90	97	74	53	63	70	52	48	74	177	89							
1977	128	132	135	114	127	119	128	98	70	83	93	69	64	98	235	118	133						
1978	128	132	135	115	127	119	129	98	70	83	93	69	64	99	236	118	133	100					
1979	122	125	128	109	121	113	122	93	67	79	89	66	61	94	224	112	126	95	95				
1980	143	147	150	128	141	133	143	109	78	93	104	77	71	110	262	132	148	112	111	117			
1981	145	149	152	129	143	134	145	111	79	94	105	78	72	111	266	133	150	113	113	119	101		
1982	177	181	186	158	175	164	177	135	97	115	128	95	88	136	324	162	183	138	138	145	124	122	
1983	216	222	227	193	214	200	217	165	118	140	157	117	108	166	396	199	223	169	168	177	151	149	122
1984	272	279	286	243	269	252	272	208	149	177	197	147	136	209	499	250	281	212	212	223	190	188	154
1985	309	317	325	276	306	287	310	236	169	201	224	167	154	238	567	284	320	241	241	253	216	213	175
1986	380	390	398	339	375	352	380	290	207	246	275	205	190	292	696	349	392	296	295	311	265	262	215
1987	398	408	417	355	393	369	398	304	217	258	289	215	199	305	729	365	411	310	310	325	278	274	225
1988	415	426	436	370	411	385	416	317	227	270	301	224	207	319	762	382	429	324	323	340	290	286	235
1989	523	536	549	466	517	485	523	399	286	339	379	282	261	401	958	480	540	408	407	428	365	360	296
1990	432	443	453	385	427	400	433	330	236	280	313	233	216	332	792	397	446	337	336	353	302	298	244
1991	500	513	524	446	494	463	500	382	273	324	363	270	250	384	916	459	516	390	389	409	349	344	283
1992	584	599	613	521	577	541	584	446	319	379	423	315	291	448	1070	536	603	455	454	478	408	402	330
1993	730	749	766	651	722	677	731	558	399	474	530	394	365	561	1339	671	755	569	568	597	510	503	413
1994	668	685	701	596	660	619	669	510	365	434	485	361	333	513	1224	613	690	521	520	546	467	460	378
1995	796	817	835	710	787	738	797	608	435	517	577	430	397	611	1459	731	822	621	619	651	556	549	450
1996	900	923	944	803	889	834	901	687	492	584	653	486	449	691	1650	827	930	702	700	736	629	620	509
1997	1073	1101	1126	957	1061	995	1075	820	586	697	779	579	536	824	1968	986	1109	837	835	878	750	740	607
1998	1187	1218	1246	1059	1174	1101	1189	907	649	771	862	641	593	912	2177	1091	1227	926	924	972	830	819	672
1999	1445	1482	1516	1289	1428	1340	1447	1104	789	938	1048	780	722	1110	2649	1327	1493	1127	1124	1182	1009	996	817
2000	1321	1355	1386	1178	1305	1224	1323	1009	722	858	958	713	660	1014	2422	1213	1365	1030	1028	1081	923	910	747
2001	1138	1168	1195	1016	1125	1056	1140	870	622	739	826	615	569	874	2088	1046	1177	888	886	932	795	785	644
2002	859	882	902	766	849	797	861	656	470	558	624	464	429	660	1576	790	888	670	669	703	600	592	486
2003	1005	1031	1054	896	993	931	1006	767	549	652	729	542	502	771	1842	923	1038	783	782	822	702	693	568
2004	1092	1121	1147	974	1080	1013	1094	835	597	709	793	590	546	839	2003	1004	1129	852	850	894	763	753	618
2005	1299	1333	1364	1159	1284	1205	1301	993	710	844	943	702	649	998	2383	1194	1343	1013	1011	1063	908	896	735
2006	1448	1486	1520	1292	1432	1343	1450	1106	791	940	1051	782	723	1112	2656	1331	1497	1129	1127	1185	1012	998	819
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1984	126																						
1985	143	114																					
1986	176	140	123																				
1987	184	146	129	105																			
1988	192	153	134	109	104																		
1989	242	192	169	138	131	126																	
1990	200	159	140	114	109	104	83																
1991	231	184	162	132	126	120	96	116															
1992	270	215	189	154	147	141	112	135	117														
1993	338	268	236	192	184	176	140	169	146	125													
1994	309	245	216	176	168	161	128	155	134	114	91												
1995	368	292	257	210	200	192	152	184	159	136	109	119											
1996	416	331	291	237	226	217	172	208	180	154	123	135	113										
1997	496	394	347	283	270	258	205	248	215	184	147	161	135	119									
1998	549	436	384	313	299	286	227	275	238	203	163	178	149	132	111								
1999	668	531	467	381	363	348	276	334	289	248	198	216	182	161	135	122							
2000	611	485	427	348	332	318	253	306	264	226	181	198	166	147	123	111	91						
2001	527	418	368	300	286	274	218	264	228	195	156	171	143	127	106	96	79	86					
2002	397	316	278	226	216	207	164	199	172	147	118	129	108	95	80	72	59	65	75				
2003	465	369	325	265	253	242	192	233	201	172	138	150	126	112	94	85	70	76	88	117			
2004	505	402	353	288	275	263	209	253	219	187	150	164	137	121	102	92	76	83	96	127	109		
2005	601	478	420	342	327	313	249	301	260	223	178	195	163	144	121	109	90	98	114	151	129	119	
2006	670	532	468	382	364	349	277	335	290	248	198	217	182	161	135	122	100	110	127	169	144	133	111
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

The dates along the top (and bottom) are those on which each portfolio starts. Those down the side are the dates to which the change in real value is calculated. Reading the top figure in each column diagonally down the table gives the growth in each year since 1960. The table can be used to see the real growth over any period; thus an investment of £100 made at the end of 1960 would have fallen to £97 (allowing for reinvestment of income and the effect of inflation) in one year but after three years (up to the end of 1963) would have reached £112 in real terms. Each figure on the bottom line of the table shows the real growth up to December 2006 from the year shown below the figure.

REAL RETURN ON GILTS - GROSS INCOME RE-INVESTED
AVERAGE ANNUAL REAL RATE OF RETURN

The dates along the top (and bottom) are those on which each portfolio starts. Those down the side are the dates to which the annual rate of return is calculated. Reading the top figure in each column diagonally down the table gives the real rate of return in each year since 1960. The table can be used to see the real rate of return over any period; thus a purchase made at the end of 1960 would have lost 11.9% (allowing for reinvestment of income) in one year but over the first three years (up to the end of 1963) would have given an average annual real return of 2.9%. Each figure on the bottom line of the table shows the real growth up to December 2006 from the year shown below the figure.

INVESTMENT FROM END YEAR (columns); INVESTMENT TO END YEAR (rows)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1961	(11.9)
1962	3.5	21.5
1963	2.9	11.2	1.8
1964	0.4	4.9	(2.6)	(6.7)
1965	0.3	3.6	(1.8)	(3.5)	(0.1)
1966	0.3	3.0	(1.2)	(2.2)	0.2	0.5
1967	0.3	2.5	(0.9)	(1.6)	0.2	0.3	0.1
1968	(0.8)	0.9	(2.1)	(2.9)	(1.9)	(2.5)	(4.0)	(7.8)
1969	(1.1)	0.3	(2.4)	(3.1)	(2.4)	(2.9)	(4.0)	(6.1)	(4.2)
1970	(1.4)	(0.2)	(2.6)	(3.2)	(2.6)	(3.1)	(4.0)	(5.4)	(4.1)	(4.0)
1971	0.1	1.4	(0.6)	(0.9)	(0.1)	(0.1)	(0.2)	(0.3)	2.4	5.9	16.8
1972	(0.9)	0.2	(1.7)	(2.1)	(1.5)	(1.7)	(2.0)	(2.4)	(1.0)	0.0	2.1	(10.7)
1973	(2.3)	(1.4)	(3.3)	(3.7)	(3.4)	(3.8)	(4.4)	(5.1)	(4.6)	(4.7)	(4.9)	(14.2)	(17.6)
1974	(4.4)	(3.8)	(5.7)	(6.4)	(6.3)	(7.0)	(7.9)	(9.0)	(9.1)	(10.1)	(11.6)	(19.4)	(23.4)	(28.8)
1975	(3.6)	(2.9)	(4.6)	(5.1)	(5.0)	(5.4)	(6.1)	(6.8)	(6.7)	(7.1)	(7.7)	(13.0)	(13.7)	(11.7)	9.5
1976	(3.4)	(2.8)	(4.4)	(4.8)	(4.7)	(5.1)	(5.6)	(6.2)	(6.0)	(6.3)	(6.6)	(10.7)	(10.7)	(8.3)	4.1	(1.1)
1977	(1.8)	(1.1)	(2.4)	(2.7)	(2.4)	(2.6)	(2.9)	(3.2)	(2.6)	(2.4)	(2.2)	(5.1)	(3.9)	(0.1)	11.8	13.0	29.1
1978	(2.2)	(1.6)	(2.9)	(3.2)	(2.9)	(3.1)	(3.4)	(3.8)	(3.3)	(3.2)	(3.1)	(5.7)	(4.8)	(2.1)	6.1	5.0	8.1	(9.4)
1979	(2.7)	(2.2)	(3.4)	(3.7)	(3.5)	(3.7)	(4.1)	(4.4)	(4.1)	(4.1)	(4.1)	(6.4)	(5.8)	(3.6)	2.4	0.7	1.3	(10.3)	(11.2)
1980	(2.3)	(1.8)	(2.9)	(3.2)	(3.0)	(3.2)	(3.4)	(3.7)	(3.4)	(3.3)	(3.2)	(5.2)	(4.5)	(2.5)	2.8	1.5	2.2	(5.5)	(3.4)	5.0
1981	(2.7)	(2.2)	(3.3)	(3.6)	(3.4)	(3.6)	(3.8)	(4.1)	(3.8)	(3.8)	(3.8)	(5.6)	(5.0)	(3.3)	1.0	(0.4)	(0.2)	(6.4)	(5.4)	(2.3)	(9.2)
1982	(0.9)	(0.4)	(1.4)	(1.5)	(1.2)	(1.3)	(1.4)	(1.5)	(1.0)	(0.8)	(0.5)	(1.9)	(1.0)	1.0	5.5	5.0	6.0	1.9	5.0	11.1	14.2	43.6
1983	(0.5)	0.1	(0.8)	(1.0)	(0.7)	(0.7)	(0.8)	(0.8)	(0.3)	(0.0)	0.3	(1.0)	(0.1)	1.9	6.0	5.6	6.6	3.2	6.0	10.8	12.8	25.7	10.0
1984	(0.4)	0.2	(0.7)	(0.8)	(0.5)	(0.5)	(0.6)	(0.6)	(0.2)	0.1	0.4	(0.8)	0.1	1.9	5.6	5.2	6.0	3.1	5.3	9.0	10.0	17.3	6.0
1985	(0.2)	0.4	(0.5)	(0.6)	(0.3)	(0.3)	(0.3)	(0.3)	0.1	0.4	0.7	(0.4)	0.5	2.2	5.6	5.2	5.9	3.3	5.3	8.3	9.0	14.1	5.7
1986	0.1	0.6	(0.2)	(0.3)	0.1	0.1	0.0	0.0	0.5	0.8	1.1	0.1	0.9	2.5	5.7	5.3	6.0	3.7	5.5	8.1	8.7	12.6	6.0
1987	0.5	1.0	0.3	0.2	0.6	0.6	0.6	0.6	1.1	1.4	1.7	0.8	1.6	3.2	6.2	5.9	6.6	4.5	6.2	8.6	9.1	12.5	7.2
1988	0.6	1.1	0.4	0.3	0.6	0.7	0.7	0.7	1.1	1.4	1.7	0.9	1.7	3.1	5.9	5.6	6.2	4.3	5.8	7.9	8.3	11.0	6.4
1989	0.5	1.0	0.3	0.2	0.5	0.6	0.6	0.6	1.0	1.3	1.6	0.8	1.5	2.8	5.4	5.1	5.6	3.8	5.1	6.9	7.1	9.4	5.2
1990	0.4	0.8	0.2	0.1	0.4	0.4	0.4	0.4	0.8	1.0	1.3	0.6	1.2	2.5	4.8	4.5	4.9	3.3	4.4	5.9	6.0	7.9	4.1
1991	0.8	1.2	0.6	0.6	0.8	0.9	0.9	0.9	1.3	1.6	1.9	1.2	1.8	3.1	5.3	5.1	5.5	4.0	5.1	6.6	6.7	8.4	5.1
1992	1.2	1.7	1.1	1.0	1.3	1.4	1.4	1.5	1.9	2.2	2.5	1.8	2.5	3.7	5.9	5.6	6.1	4.7	5.8	7.2	7.4	9.1	6.1
1993	1.9	2.4	1.8	1.8	2.1	2.2	2.3	2.3	2.8	3.1	3.4	2.8	3.5	4.7	6.8	6.7	7.2	5.9	7.1	8.5	8.8	10.4	7.8
1994	1.4	1.8	1.3	1.3	1.5	1.6	1.6	1.7	2.1	2.3	2.6	2.0	2.7	3.7	5.7	5.5	5.9	4.7	5.6	6.8	7.0	8.3	5.8
1995	1.8	2.2	1.7	1.7	2.0	2.0	2.1	2.1	2.5	2.8	3.1	2.6	3.2	4.2	6.1	6.0	6.4	5.2	6.2	7.4	7.5	8.8	6.5
1996	1.9	2.3	1.8	1.8	2.1	2.1	2.2	2.2	2.6	2.9	3.2	2.7	3.3	4.3	6.1	5.9	6.3	5.2	6.1	7.2	7.4	8.6	6.4
1997	2.2	2.6	2.1	2.1	2.4	2.5	2.6	2.7	3.0	3.3	3.6	3.1	3.7	4.7	6.5	6.3	6.7	5.7	6.6	7.7	7.8	9.0	7.0
1998	2.7	3.1	2.6	2.7	2.9	3.0	3.1	3.2	3.6	3.9	4.2	3.7	4.3	5.3	7.1	7.0	7.4	6.4	7.3	8.3	8.5	9.7	7.8
1999	2.5	2.9	2.4	2.4	2.7	2.8	2.9	2.9	3.3	3.6	3.8	3.4	4.0	4.9	6.6	6.4	6.8	5.9	6.6	7.6	7.8	8.8	7.0
2000	2.6	3.0	2.5	2.5	2.8	2.9	3.0	3.0	3.4	3.7	3.9	3.5	4.1	5.0	6.5	6.4	6.7	5.9	6.6	7.6	7.7	8.6	7.0
2001	2.5	2.9	2.5	2.5	2.7	2.8	2.9	3.0	3.3	3.6	3.8	3.4	3.9	4.8	6.3	6.2	6.5	5.6	6.4	7.2	7.3	8.2	6.6
2002	2.6	3.0	2.6	2.6	2.8	2.9	3.0	3.1	3.4	3.7	3.9	3.5	4.0	4.9	6.3	6.2	6.5	5.7	6.4	7.2	7.3	8.2	6.6
2003	2.5	2.9	2.5	2.5	2.7	2.8	2.9	3.0	3.3	3.5	3.7	3.4	3.8	4.7	6.1	5.9	6.2	5.4	6.1	6.8	6.9	7.7	6.3
2004	2.5	2.9	2.5	2.5	2.8	2.8	2.9	3.0	3.3	3.5	3.7	3.4	3.8	4.6	6.0	5.9	6.1	5.3	6.0	6.7	6.8	7.5	6.1
2005	2.6	3.0	2.6	2.6	2.8	2.9	3.0	3.0	3.4	3.6	3.8	3.4	3.9	4.7	6.0	5.9	6.1	5.4	6.0	6.7	6.7	7.5	6.1
2006	2.5	2.8	2.4	2.4	2.7	2.7	2.8	2.9	3.1	3.4	3.6	3.2	3.7	4.4	5.6	5.5	5.7	5.0	5.6	6.3	6.3	7.0	5.7
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1984	2.1
1985	3.6	5.0
1986	4.7	6.0	7.0
1987	6.5	8.0	9.5	12.1
1988	5.7	6.6	7.1	7.2	2.4
1989	4.4	4.9	4.8	4.2	0.4	(1.7)
1990	3.3	3.4	3.1	2.2	(0.9)	(2.5)	(3.4)
1991	4.5	4.9	4.8	4.4	2.6	2.6	4.8	13.8
1992	5.7	6.1	6.3	6.2	5.0	5.7	8.3	14.6	15.4
1993	7.6	8.2	8.6	8.9	8.3	9.5	12.5	18.4	20.8	26.4
1994	5.4	5.8	5.9	5.7	4.8	5.2	6.7	9.4	7.9	4.4	(13.8)
1995	6.2	6.6	6.8	6.7	6.1	6.6	8.1	10.5	9.7	7.9	(0.3)	15.3
1996	6.1	6.5	6.6	6.6	6.0	6.4	7.6	9.6	8.8	7.2	1.5	10.1	5.1
1997	6.8	7.1	7.3	7.3	6.9	7.4	8.6	10.4	9.8	8.8	4.7	11.8	10.1	15.3
1998	7.7	8.1	8.4	8.5	8.1	8.7	10.0	11.7	11.5	10.8	7.9	14.2	13.8	18.4	21.7
1999	6.8	7.2	7.3	7.4	7.0	7.4	8.3	9.7	9.2	8.4	5.6	10.0	8.7	9.9	7.4	(5.2)
2000	6.8	7.1	7.2	7.3	6.9	7.3	8.1	9.4	8.9	8.1	5.7	9.3	8.2	9.0	7.0	0.3	6.1
2001	6.5	6.7	6.8	6.8	6.4	6.8	7.5	8.5	8.0	7.2	5.0	8.1	6.9	7.3	5.3	0.4	3.3	0.6
2002	6.5	6.7	6.8	6.8	6.5	6.7	7.4	8.4	7.9	7.2	5.2	7.9	6.9	7.2	5.6	1.9	4.4	3.6	6.7
2003	6.1	6.3	6.3	6.3	6.0	6.2	6.8	7.6	7.1	6.4	4.6	6.8	5.8	5.9	4.4	1.3	3.0	2.0	2.7	(1.2)
2004	5.9	6.1	6.2	6.2	5.8	6.0	6.6	7.3	6.8	6.1	4.5	6.5	5.6	5.6	4.3	1.7	3.1	2.4	3.0	1.2	3.6
2005	6.0	6.1	6.2	6.2	5.8	6.0	6.5	7.2	6.8	6.1	4.6	6.5	5.6	5.7	4.5	2.3	3.6	3.1	3.7	2.8	4.8	6.0
2006	5.5	5.6	5.7	5.6	5.3	5.4	5.9	6.5	6.0	5.4	3.9	5.5	4.7	4.6	3.5	1.4	2.4	1.8	2.1	0.9	1.7	0.7	(4.4)
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

REAL VALUE OF £100 INVESTED

The dates along the top (and bottom) are those on which each portfolio starts. Those down the side are the dates to which the change in real value is calculated. Reading the top figure in each column diagonally down the table gives the growth in each year since 1960. The table can be used to see the real growth over any period; thus an investment of £100 made at the end of 1960 would have fallen to £88 (allowing for reinvestment of income and the effect of inflation) in one year but after three years (up to the end of 1963) would have reached £109 in real terms. Each figure on the bottom line of the table shows the real growth up to December 2006 from the year shown below the figure.

INVESTMENT TO END YEAR (rows)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1961	88
1962	107	121
1963	109	124	102
1964	102	115	95	93
1965	101	115	95	93	100
1966	102	116	95	94	100	101
1967	102	116	95	94	100	101	100
1968	94	107	88	86	93	93	92	92
1969	90	102	84	83	89	89	88	88	96
1970	87	98	81	79	85	85	85	85	92	96
1971	101	115	94	93	99	100	99	99	107	112	117
1972	90	102	84	83	89	89	88	88	96	100	104	89
1973	74	84	69	68	73	73	73	73	79	83	86	74	82
1974	53	60	49	49	52	52	52	52	56	59	61	52	59	71
1975	58	66	54	53	57	57	57	57	62	64	67	57	64	78	110
1976	57	65	54	53	56	56	56	56	61	64	66	57	63	77	108	99
1977	74	84	69	68	73	73	73	72	79	82	86	73	82	100	140	128	129
1978	67	76	63	61	66	66	66	66	71	74	77	66	74	90	127	116	117	91
1979	59	68	56	55	59	59	58	58	63	66	69	59	66	80	112	103	104	80	89
1980	62	71	58	57	61	62	61	61	66	69	72	62	69	84	118	108	109	84	93	105
1981	57	64	53	52	56	56	56	56	60	63	66	56	63	76	107	98	99	77	85	95	91
1982	81	92	76	75	80	80	80	80	87	90	94	81	90	110	154	141	142	110	122	137	130	144
1983	90	102	84	82	88	88	88	88	95	99	104	89	99	121	169	155	156	121	134	151	143	158	110
1984	92	104	86	84	90	90	90	90	97	102	106	91	101	123	173	158	160	124	137	154	147	161	112
1985	96	109	90	88	95	95	94	94	102	107	111	95	107	129	182	166	168	130	143	162	154	169	118
1986	103	117	96	94	101	101	101	101	109	114	119	102	114	138	194	177	179	139	153	173	165	181	126
1987	115	131	108	106	113	114	113	113	123	128	133	114	128	155	218	199	201	156	172	194	185	203	142
1988	118	134	110	108	116	116	116	116	126	131	137	117	131	159	223	204	206	160	176	199	189	208	145
1989	116	132	109	107	114	114	114	114	123	129	134	115	129	156	220	200	203	157	173	195	186	205	143
1990	112	127	105	103	110	111	110	110	119	125	130	111	124	151	212	194	196	152	167	189	180	198	138
1991	128	145	119	117	126	126	125	125	136	142	148	126	142	172	241	220	223	173	191	215	204	225	157
1992	147	167	138	135	145	145	144	144	157	164	170	146	163	198	279	254	257	199	220	248	236	260	181
1993	186	211	174	171	183	184	183	182	198	207	215	184	206	251	352	321	325	252	278	313	298	328	229
1994	161	182	150	147	158	158	157	157	171	178	186	159	178	216	303	277	280	217	240	270	257	283	197
1995	185	210	173	170	182	182	181	181	197	205	214	183	205	249	350	319	323	250	276	311	296	326	227
1996	195	221	182	179	191	192	191	191	207	216	225	193	216	262	368	336	340	263	290	327	311	343	239
1997	224	255	210	206	221	221	220	220	238	249	259	222	248	302	424	387	391	303	335	377	359	395	275
1998	273	310	255	250	268	269	267	267	290	303	315	270	302	367	516	471	476	369	407	459	437	481	335
1999	259	294	242	237	254	255	254	253	275	287	299	256	287	348	489	446	451	350	386	435	414	456	317
2000	274	311	256	252	270	270	269	269	292	305	317	272	304	369	519	473	479	371	410	461	439	483	337
2001	276	314	258	253	272	272	271	270	293	306	319	273	306	371	522	476	482	373	412	464	442	487	339
2002	295	334	275	270	290	290	289	289	313	327	341	292	326	396	557	508	514	398	440	495	471	519	362
2003	291	330	272	267	286	287	285	285	309	323	336	288	322	391	550	502	508	393	434	489	466	513	357
2004	301	342	282	277	297	297	296	295	320	335	349	298	334	405	570	520	526	407	450	507	482	531	370
2005	320	363	299	293	315	315	313	313	340	355	370	316	354	430	604	552	558	432	477	537	512	563	392
2006	306	347	286	281	301	301	300	299	325	339	353	303	339	411	578	527	534	413	456	514	489	539	375
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1984	102
1985	107	105
1986	115	112	107
1987	129	126	120	112
1988	132	129	123	115	102
1989	130	127	121	113	101	98
1990	125	123	117	109	97	95	97
1991	142	139	133	124	111	108	110	114
1992	164	161	153	143	128	125	127	131	115
1993	208	203	194	181	162	158	160	166	146	126
1994	179	175	167	156	139	136	138	143	126	109	86
1995	206	202	193	180	160	157	159	165	145	126	99	115
1996	217	213	202	189	169	165	167	173	152	132	104	121	105
1997	250	245	233	218	194	190	193	200	176	152	120	140	121	115
1998	304	298	284	265	237	231	235	243	214	185	146	170	147	140	122
1999	288	282	269	251	224	219	223	230	202	175	139	161	140	133	115	95
2000	306	300	285	267	238	232	236	245	215	186	147	171	148	141	122	101	106
2001	308	302	287	269	239	234	238	246	216	187	148	172	149	142	123	101	107	101
2002	329	322	306	287	255	249	254	263	231	200	158	183	159	151	131	108	114	107	107
2003	325	318	303	283	252	246	251	259	228	197	156	181	157	150	130	107	113	106	105	99
2004	336	329	314	293	261	255	260	269	236	205	162	188	163	155	134	111	117	110	109	102	104
2005	357	349	333	311	277	271	275	285	250	217	172	199	173	164	143	117	124	117	116	109	110	106
2006	341	334	318	297	265	259	263	272	239	207	164	190	165	157	136	112	118	111	111	104	105	101	96
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

REAL RETURN ON TREASURY BILLS - GROSS INCOME RE-INVESTED
AVERAGE ANNUAL REAL RATE OF RETURN

INVESTMENT FROM END YEAR

INVESTMENT TO END YEAR

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1961	0.7																				
1962	1.3	1.8																			
1963	1.5	1.8	1.9																		
1964	1.0	1.1	0.8	(0.4)																	
1965	1.1	1.2	1.1	0.7	1.7																
1966	1.3	1.5	1.4	1.2	2.0	2.4															
1967	1.6	1.8	1.8	1.8	2.5	2.9	3.4														
1968	1.6	1.7	1.7	1.7	2.2	2.4	2.4	1.4													
1969	1.8	1.9	1.9	1.9	2.4	2.6	2.6	2.3	3.1												
1970	1.6	1.6	1.6	1.6	1.9	2.0	1.9	1.4	1.3	(0.4)											
1971	1.2	1.2	1.1	1.1	1.3	1.2	0.9	0.4	0.0	(1.5)	(2.6)										
1972	0.9	0.9	0.8	0.7	0.8	0.7	0.4	(0.1)	(0.5)	(1.7)	(2.3)	(2.1)									
1973	0.7	0.7	0.6	0.5	0.6	0.4	0.2	(0.4)	(0.7)	(1.6)	(2.0)	(1.7)	(1.4)								
1974	0.3	0.2	0.1	(0.1)	(0.0)	(0.2)	(0.6)	(1.1)	(1.5)	(2.4)	(2.9)	(3.0)	(3.5)	(5.5)							
1975	(0.6)	(0.7)	(0.8)	(1.1)	(1.1)	(1.4)	(1.8)	(2.4)	(3.0)	(4.0)	(4.7)	(5.2)	(6.2)	(8.5)	(11.3)						
1976	(0.7)	(0.8)	(1.0)	(1.2)	(1.3)	(1.6)	(2.0)	(2.5)	(3.0)	(3.9)	(4.4)	(4.8)	(5.4)	(6.8)	(7.4)	(3.2)					
1977	(0.8)	(0.9)	(1.1)	(1.3)	(1.4)	(1.6)	(2.0)	(2.5)	(2.9)	(3.7)	(4.1)	(4.4)	(4.8)	(5.7)	(5.7)	(2.8)	(2.4)				
1978	(0.8)	(0.9)	(1.1)	(1.3)	(1.3)	(1.5)	(1.9)	(2.3)	(2.7)	(3.3)	(3.7)	(3.8)	(4.1)	(4.6)	(4.4)	(2.0)	(1.4)	(0.3)			
1979	(0.9)	(1.0)	(1.2)	(1.4)	(1.4)	(1.7)	(2.0)	(2.4)	(2.7)	(3.3)	(3.6)	(3.7)	(4.0)	(4.4)	(4.2)	(2.3)	(2.0)	(1.8)	(3.2)		
1980	(0.8)	(0.9)	(1.0)	(1.2)	(1.2)	(1.4)	(1.7)	(2.1)	(2.4)	(2.9)	(3.1)	(3.1)	(3.3)	(3.5)	(3.2)	(1.5)	(1.1)	(0.6)	(0.8)	1.8	
1981	(0.7)	(0.8)	(0.9)	(1.0)	(1.1)	(1.3)	(1.5)	(1.8)	(2.1)	(2.5)	(2.7)	(2.7)	(2.8)	(2.9)	(2.5)	(1.0)	(0.5)	(0.1)	(0.0)	1.7	1.5
1982	(0.4)	(0.4)	(0.5)	(0.7)	(0.7)	(0.8)	(1.0)	(1.3)	(1.5)	(1.8)	(1.9)	(1.9)	(1.9)	(1.9)	(1.4)	0.1	0.6	1.2	1.6	3.3	4.0	6.6
1983	(0.2)	(0.2)	(0.3)	(0.4)	(0.4)	(0.5)	(0.7)	(0.9)	(1.1)	(1.4)	(1.5)	(1.4)	(1.3)	(1.3)	(0.8)	0.6	1.2	1.8	2.2	3.6	4.2	5.6
1984	0.0	0.0	(0.1)	(0.2)	(0.1)	(0.2)	(0.4)	(0.6)	(0.7)	(1.0)	(1.0)	(0.9)	(0.8)	(0.7)	(0.3)	1.1	1.6	2.2	2.6	3.8	4.4	5.3
1985	0.3	0.2	0.2	0.1	0.1	0.0	(0.1)	(0.3)	(0.4)	(0.6)	(0.6)	(0.4)	(0.3)	(0.2)	0.3	1.5	2.1	2.6	3.1	4.2	4.7	5.4
1986	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.1	0.0	(0.1)	(0.1)	0.0	0.2	0.3	0.8	2.0	2.6	3.1	3.6	4.6	5.0	5.7
1987	0.7	0.7	0.7	0.6	0.7	0.6	0.5	0.4	0.3	0.2	0.2	0.4	0.6	0.7	1.2	2.3	2.8	3.4	3.8	4.7	5.1	5.7
1988	0.8	0.8	0.8	0.7	0.8	0.7	0.7	0.5	0.5	0.4	0.4	0.6	0.8	0.9	1.4	2.4	2.9	3.4	3.8	4.6	5.0	5.5
1989	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.9	1.1	1.2	1.7	2.7	3.2	3.7	4.0	4.8	5.1	5.6
1990	1.2	1.2	1.2	1.1	1.2	1.2	1.1	1.0	1.0	0.9	1.0	1.2	1.4	1.5	2.0	2.9	3.4	3.8	4.2	4.9	5.2	5.6
1991	1.3	1.4	1.4	1.3	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.4	1.6	1.8	2.3	3.2	3.6	4.1	4.4	5.1	5.4	5.8
1992	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.4	1.5	1.7	1.9	2.1	2.5	3.4	3.8	4.2	4.6	5.2	5.5	5.8
1993	1.6	1.6	1.6	1.6	1.7	1.7	1.6	1.6	1.6	1.5	1.6	1.8	2.0	2.1	2.6	3.4	3.8	4.2	4.5	5.1	5.3	5.7
1994	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.6	1.6	1.5	1.6	1.8	2.0	2.2	2.6	3.3	3.7	4.1	4.4	4.9	5.1	5.4
1995	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.7	1.9	2.1	2.2	2.6	3.4	3.7	4.1	4.3	4.8	5.0	5.3
1996	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.7	1.7	1.7	1.8	2.0	2.1	2.3	2.6	3.4	3.7	4.0	4.3	4.7	4.9	5.2
1997	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.8	2.0	2.2	2.3	2.7	3.4	3.7	4.0	4.2	4.7	4.8	5.0
1998	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.3	2.4	2.8	3.4	3.7	4.0	4.3	4.7	4.8	5.0
1999	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	2.0	1.9	2.0	2.2	2.3	2.5	2.8	3.4	3.7	4.0	4.2	4.6	4.8	5.0
2000	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.4	2.5	2.8	3.4	3.7	4.0	4.2	4.6	4.7	4.9
2001	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.3	2.4	2.6	2.9	3.5	3.8	4.0	4.2	4.6	4.7	4.9
2002	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.2	2.4	2.5	2.8	3.4	3.7	3.9	4.1	4.4	4.5	4.7
2003	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.5	2.8	3.3	3.6	3.8	4.0	4.3	4.4	4.5
2004	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.3	2.4	2.7	3.2	3.5	3.7	3.8	4.1	4.2	4.4
2005	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.3	2.4	2.7	3.2	3.4	3.7	3.8	4.1	4.2	4.3
2006	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.1	2.3	2.4	2.6	3.1	3.3	3.5	3.7	3.9	4.0	4.1
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1983	4.6																						
1984	4.7	4.8																					
1985	5.1	5.3	5.8																				
1986	5.5	5.9	6.4	7.0																			
1987	5.6	5.8	6.2	6.3	5.7																		
1988	5.3	5.4	5.6	5.5	4.8	4.0																	
1989	5.4	5.6	5.8	5.7	5.3	5.2	6.4																
1990	5.5	5.6	5.8	5.8	5.5	5.4	6.2	6.0															
1991	5.7	5.8	5.9	6.0	5.8	5.8	6.4	6.4	6.8														
1992	5.8	5.9	6.0	6.1	5.9	6.0	6.5	6.5	6.8	6.7													
1993	5.6	5.7	5.8	5.8	5.6	5.6	5.9	5.8	5.8	5.3	3.9												
1994	5.3	5.4	5.5	5.4	5.2	5.2	5.4	5.2	5.0	4.3	3.2	2.4											
1995	5.2	5.2	5.3	5.2	5.0	4.9	5.1	4.9	4.6	4.1	3.2	2.9	3.4										
1996	5.1	5.1	5.1	5.1	4.9	4.8	4.9	4.7	4.5	4.0	3.3	3.2	3.5	3.6									
1997	4.9	5.0	5.0	4.9	4.7	4.6	4.7	4.5	4.3	3.9	3.3	3.2	3.4	3.4	3.1								
1998	4.9	5.0	5.0	4.9	4.7	4.7	4.7	4.5	4.4	4.0	3.6	3.5	3.8	3.9	4.1	5.0							
1999	4.9	4.9	4.9	4.8	4.7	4.6	4.6	4.5	4.3	4.0	3.6	3.5	3.8	3.9	3.9	4.4	3.7						
2000	4.8	4.8	4.8	4.7	4.6	4.5	4.5	4.3	4.2	3.9	3.5	3.5	3.7	3.7	3.8	4.0	3.4	3.2					
2001	4.8	4.8	4.8	4.7	4.6	4.5	4.5	4.4	4.2	4.0	3.7	3.7	3.8	3.9	4.0	4.2	3.9	4.0	4.8				
2002	4.6	4.6	4.6	4.5	4.4	4.3	4.3	4.1	4.0	3.7	3.4	3.4	3.5	3.5	3.5	3.6	3.2	3.0	2.9	1.1			
2003	4.4	4.4	4.4	4.3	4.1	4.1	4.1	3.9	3.7	3.5	3.2	3.1	3.2	3.2	3.1	3.1	2.7	2.5	2.3	1.0	0.9		
2004	4.3	4.2	4.2	4.1	4.0	3.9	3.9	3.7	3.5	3.3	3.0	2.9	3.0	2.9	2.9	2.8	2.5	2.2	2.0	1.0	1.0	1.1	
2005	4.2	4.2	4.1	4.1	3.9	3.8	3.8	3.6	3.5	3.3	3.0	2.9	3.0	2.9	2.8	2.8	2.5	2.3	2.1	1.5	1.6	1.9	2.7
2006	4.0	4.0	4.0	3.9	3.7	3.6	3.6	3.5	3.3	3.1	2.8	2.7	2.8	2.7	2.6	2.5	2.2	2.0	1.8	1.3	1.3	1.4	1.6	0.4
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

The dates along the top (and bottom) are those on which each portfolio starts. Those down the side are the dates to which the annual rate of return is calculated. Reading the top figure in each column diagonally down the table gives the real rate of return in each year since 1960. The table can be used to see the real rate of return over any period; thus a purchase made at the end of 1963 would have lost 0.4% (allowing for reinvestment of income) in one year but over the first three years (up to the end of 1966) would have given an average annual real return of 1.2%. Each figure on the bottom line of the table shows the real growth up to December 2006 from the year shown below the figure.

REAL VALUE OF £100 INVESTED

INVESTMENT TO END YEAR

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1961	101																				
1962	103	102																			
1963	104	104	102																		
1964	104	103	102	100																	
1965	106	105	103	101	102																
1966	108	108	106	104	104	102															
1967	112	111	109	107	108	106	103														
1968	114	113	111	109	109	107	105	101													
1969	117	116	114	112	113	111	108	105	103												
1970	117	116	114	112	112	110	108	104	103	100											
1971	114	113	111	109	109	107	105	101	100	97	97										
1972	111	110	109	106	107	105	103	99	98	95	95	98									
1973	110	109	107	105	105	104	101	98	97	94	94	97	99								
1974	104	103	101	99	100	98	96	92	91	88	89	91	93	94							
1975	92	91	90	88	88	87	85	82	81	78	79	81	83	84	89						
1976	89	88	87	85	85	84	82	79	78	76	76	78	80	81	86	97					
1977	87	86	85	83	83	82	80	77	76	74	74	76	78	79	84	94	98				
1978	86	86	84	83	83	82	80	77	76	74	74	76	78	79	83	94	97	100			
1979	84	83	82	80	80	79	77	75	74	71	72	74	75	76	81	91	94	96	97		
1980	85	85	83	82	82	80	79	76	75	73	73	75	77	78	82	93	96	98	98	102	
1981	86	86	84	83	83	82	80	77	76	74	74	76	78	79	83	94	97	100	100	103	102
1982	92	92	90	88	89	87	85	82	81	79	79	81	83	84	89	100	104	106	107	110	108	107
1983	96	96	94	92	93	91	89	86	85	82	83	85	87	88	93	105	108	111	111	115	113	111
1984	101	100	99	97	97	95	93	90	89	86	87	89	91	92	98	110	114	116	117	121	119	117
1985	107	106	104	102	103	101	99	95	94	91	92	94	96	98	103	116	120	123	124	128	126	124
1986	114	114	112	109	110	108	106	102	101	98	98	101	103	104	110	124	129	132	132	137	134	132
1987	121	120	118	116	116	114	112	108	106	103	104	106	109	110	117	132	136	139	140	144	142	140
1988	126	125	123	120	121	119	116	112	111	107	108	111	113	115	121	137	141	145	145	150	148	145
1989	134	133	130	128	128	126	123	119	118	114	115	118	120	122	129	145	150	154	155	160	157	155
1990	142	141	138	136	136	134	131	126	125	121	121	125	127	129	137	154	159	163	164	169	166	164
1991	151	150	148	145	145	143	140	135	133	129	130	133	136	138	146	165	170	174	175	181	178	175
1992	161	160	157	155	155	152	149	144	142	138	138	142	145	147	156	176	182	186	187	193	190	187
1993	168	166	164	161	161	158	155	150	148	143	144	148	151	153	162	183	189	193	194	200	197	194
1994	172	171	168	164	165	162	159	153	151	147	147	151	154	157	166	187	193	198	199	205	202	199
1995	178	176	173	170	171	168	164	159	156	152	152	156	160	162	171	193	200	205	205	212	209	205
1996	184	183	180	176	177	174	170	164	162	157	158	162	166	168	178	200	207	212	213	220	216	213
1997	190	188	185	182	182	179	175	170	167	162	163	167	171	173	183	207	214	219	220	227	223	220
1998	199	198	195	191	192	188	184	178	176	170	171	176	179	182	192	217	224	230	231	238	234	231
1999	207	205	202	198	199	195	191	185	182	177	177	182	186	189	200	225	233	238	239	247	243	239
2000	213	212	208	204	205	202	197	190	188	182	183	188	192	195	206	232	240	246	247	255	250	247
2001	224	222	218	214	215	211	206	200	197	191	192	197	201	204	216	243	251	258	258	267	262	258
2002	226	224	221	216	217	214	209	202	199	193	194	199	203	206	218	246	254	261	261	270	265	261
2003	228	227	223	218	219	216	211	204	201	195	196	201	205	208	220	248	257	263	264	273	268	264
2004	231	229	225	221	222	218	213	206	203	197	198	203	207	210	223	251	259	266	267	276	271	267
2005	237	235	231	227	228	224	219	212	209	202	203	209	213	216	229	258	267	273	274	283	278	274
2006	238	236	232	228	229	225	220	212	210	203	204	210	214	217	230	259	268	274	275	284	279	275
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1983	105																						
1984	110	105																					
1985	116	111	106																				
1986	124	119	113	107																			
1987	131	125	120	113	106																		
1988	136	130	124	118	110	104																	
1989	145	139	132	125	117	111	106																
1990	154	147	140	132	124	117	113	106															
1991	164	157	150	141	132	125	120	113	107														
1992	175	167	160	151	141	134	128	121	114	107													
1993	182	174	166	157	147	139	133	125	118	111	104												
1994	186	178	170	161	150	142	137	129	121	114	106	102											
1995	193	184	176	166	155	147	141	133	125	117	110	106	103										
1996	200	191	182	172	161	152	146	138	130	122	114	110	107	104									
1997	206	197	188	178	166	157	151	142	134	126	118	113	111	107	103								
1998	216	207	197	187	174	165	159	149	141	132	124	119	116	112	108	105							
1999	224	214	205	193	181	171	165	155	146	137	128	123	120	116	112	109	104						
2000	231	221	211	200	187	177	170	160	151	141	132	127	124	120	116	112	107	103					
2001	242	232	221	209	195	185	178	167	158	148	138	133	130	126	121	118	112	108	105				
2002	245	234	224	211	198	187	180	169	160	149	140	135	132	127	123	119	113	109	106	101			
2003	247	237	226	213	200	189	182	171	161	151	141	136	133	128	124	120	114	110	107	102	101		
2004	250	239	228	216	202	191	184	173	163	152	143	137	134	130	125	121	116	112	108	103	102	101	
2005	257	246	235	222	207	196	189	177	167	157	147	141	138	133	129	125	119	115	111	106	105	104	103
2006	258	247	236	223	208	197	189	178	168	157	147	142	139	134	129	125	119	115	112	106	105	104	103	100
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

The dates along the top (and bottom) are those on which each portfolio starts. Those down the side are the dates to which the change in real value is calculated. Reading the top figure in each column diagonally down the table gives the growth in each year since 1960. The table can be used to see the real growth over any period; thus an investment of £100 made at the end of 1978 would have fallen to £97 (allowing for reinvestment of income and the effect of inflation) in one year but after four years (up to the end of 1982) would have reached £107 in real terms. Each figure on the bottom line of the table shows the real growth up to December 2006 from the year shown below the figure.

REAL RETURN ON BUILDING SOCIETY ACCOUNT - GROSS INCOME RE-INVESTED

AVERAGE ANNUAL REAL RATE OF RETURN

The dates along the top (and bottom) are those on which each portfolio starts. Those down the side are the dates to which the annual rate of return is calculated. Reading the top figure in each column diagonally down the table gives the real rate of return in each year since 1960. The table can be used to see the real rate of return over any period; thus a purchase made at the end of 1960 would have grown by 1.4% (allowing for reinvestment of income) in one year but over the first three years (up to the end of 1963) would have given an average annual real return of 2.9%. Each figure on the bottom line of the table shows the real growth up to December 2006 from the year shown below the figure.

INVESTMENT FROM END YEAR (columns); INVESTMENT TO END YEAR (rows)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1961	1.4																						
1962	2.4	3.4																					
1963	2.9	3.6	3.9																				
1964	2.4	2.7	2.4	0.9																			
1965	2.3	2.5	2.2	1.4	1.9																		
1966	2.4	2.6	2.4	1.9	2.5	3.0																	
1967	2.7	3.0	2.9	2.6	3.2	3.8	4.7																
1968	2.6	2.7	2.6	2.4	2.8	3.1	3.1	1.5															
1969	2.7	2.8	2.8	2.6	2.9	3.2	3.2	2.5	3.5														
1970	2.5	2.6	2.5	2.3	2.5	2.6	2.5	1.8	2.0	0.6													
1971	2.2	2.2	2.1	1.9	2.0	2.1	1.9	1.2	1.1	(0.1)	(0.7)												
1972	2.0	2.1	2.0	1.7	1.8	1.8	1.6	1.0	0.9	0.1	(0.1)	0.5											
1973	1.8	1.8	1.7	1.5	1.6	1.5	1.3	0.7	0.6	(0.1)	(0.3)	(0.2)	(0.8)										
1974	1.2	1.1	1.0	0.7	0.7	0.6	0.2	(0.4)	(0.7)	(1.5)	(2.0)	(2.4)	(3.8)	(6.8)									
1975	0.3	0.2	(0.0)	(0.3)	(0.4)	(0.7)	(1.1)	(1.8)	(2.2)	(3.2)	(3.9)	(4.7)	(6.3)	(9.0)	(11.1)								
1976	0.0	(0.1)	(0.3)	(0.6)	(0.7)	(1.0)	(1.4)	(2.0)	(2.4)	(3.3)	(3.9)	(4.5)	(5.7)	(7.3)	(7.6)	(3.8)							
1977	(0.0)	(0.1)	(0.4)	(0.7)	(0.8)	(1.0)	(1.4)	(1.9)	(2.3)	(3.0)	(3.5)	(4.0)	(4.8)	(5.8)	(5.5)	(2.6)	(1.3)						
1978	0.0	(0.1)	(0.3)	(0.6)	(0.7)	(0.9)	(1.2)	(1.7)	(2.0)	(2.6)	(3.0)	(3.3)	(3.9)	(4.5)	(3.9)	(1.4)	(0.2)	1.0					
1979	(0.2)	(0.3)	(0.5)	(0.8)	(0.9)	(1.1)	(1.4)	(1.9)	(2.2)	(2.8)	(3.1)	(3.4)	(4.0)	(4.5)	(4.0)	(2.1)	(1.6)	(1.7)	(4.3)				
1980	(0.2)	(0.3)	(0.5)	(0.8)	(0.9)	(1.0)	(1.3)	(1.8)	(2.0)	(2.5)	(2.8)	(3.1)	(3.5)	(3.9)	(3.4)	(1.7)	(1.2)	(1.2)	(2.2)	(0.1)			
1981	(0.2)	(0.2)	(0.4)	(0.7)	(0.8)	(0.9)	(1.2)	(1.6)	(1.8)	(2.2)	(2.5)	(2.7)	(3.0)	(3.3)	(2.8)	(1.3)	(0.8)	(0.7)	(1.2)	0.3	0.8		
1982	0.1	0.1	(0.1)	(0.3)	(0.4)	(0.5)	(0.7)	(1.1)	(1.3)	(1.6)	(1.8)	(1.9)	(2.1)	(2.3)	(1.7)	(0.3)	0.4	0.7	0.6	2.3	3.6	6.4	
1983	0.3	0.2	0.1	(0.1)	(0.1)	(0.3)	(0.4)	(0.8)	(0.9)	(1.2)	(1.3)	(1.4)	(1.6)	(1.6)	(1.1)	0.3	0.9	1.3	1.3	2.8	3.8	5.3	4.1
1984	0.5	0.5	0.3	0.2	0.1	0.0	(0.1)	(0.4)	(0.5)	(0.8)	(0.9)	(0.9)	(1.0)	(1.0)	(0.4)	0.8	1.4	1.8	2.0	3.2	4.1	5.2	4.6
1985	0.7	0.6	0.5	0.4	0.3	0.3	0.1	(0.1)	(0.2)	(0.5)	(0.5)	(0.5)	(0.6)	(0.6)	0.0	1.2	1.8	2.2	2.4	3.5	4.3	5.1	4.7
1986	0.9	0.9	0.8	0.6	0.6	0.6	0.4	0.2	0.1	(0.1)	(0.1)	(0.0)	(0.1)	(0.0)	0.6	1.7	2.3	2.7	2.9	3.9	4.6	5.4	5.2
1987	1.1	1.0	1.0	0.8	0.8	0.8	0.7	0.5	0.4	0.3	0.2	0.3	0.3	0.4	0.9	2.0	2.6	3.0	3.2	4.2	4.8	5.5	5.3
1988	1.1	1.1	1.0	0.9	0.9	0.8	0.7	0.5	0.5	0.3	0.3	0.4	0.4	0.4	1.0	2.0	2.5	2.8	3.0	3.9	4.4	4.9	4.6
1989	1.1	1.1	1.0	0.9	0.9	0.9	0.8	0.6	0.6	0.4	0.4	0.5	0.5	0.6	1.1	2.0	2.5	2.8	3.0	3.7	4.2	4.6	4.4
1990	1.2	1.2	1.1	1.0	1.0	1.0	0.9	0.7	0.7	0.5	0.5	0.6	0.6	0.7	1.2	2.1	2.5	2.8	2.9	3.6	4.0	4.4	4.1
1991	1.3	1.3	1.2	1.1	1.1	1.1	1.0	0.9	0.8	0.7	0.7	0.8	0.8	0.9	1.4	2.2	2.6	2.9	3.1	3.7	4.1	4.4	4.2
1992	1.5	1.5	1.4	1.3	1.3	1.3	1.2	1.1	1.1	1.0	1.0	1.1	1.1	1.2	1.7	2.5	2.9	3.2	3.3	4.0	4.3	4.6	4.4
1993	1.5	1.5	1.4	1.3	1.4	1.3	1.3	1.1	1.1	1.0	1.0	1.1	1.2	1.3	1.7	2.5	2.9	3.1	3.3	3.8	4.1	4.4	4.2
1994	1.5	1.5	1.4	1.3	1.3	1.3	1.3	1.1	1.1	1.0	1.0	1.1	1.1	1.2	1.7	2.4	2.7	3.0	3.1	3.6	3.9	4.1	3.9
1995	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.1	1.0	1.0	1.1	1.1	1.2	1.6	2.3	2.6	2.9	3.0	3.4	3.7	3.9	3.7
1996	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.1	1.1	1.0	1.0	1.1	1.1	1.2	1.5	2.2	2.5	2.7	2.8	3.2	3.4	3.6	3.4
1997	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.0	1.0	0.9	0.9	1.0	1.0	1.1	1.5	2.1	2.4	2.5	2.6	3.0	3.2	3.4	3.2
1998	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.1	1.0	1.0	1.1	1.1	1.2	1.6	2.2	2.4	2.6	2.7	3.1	3.3	3.4	3.2
1999	1.5	1.5	1.4	1.3	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.2	1.2	1.3	1.6	2.2	2.5	2.6	2.7	3.1	3.3	3.4	3.2
2000	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.7	2.2	2.5	2.6	2.7	3.1	3.2	3.4	3.2
2001	1.6	1.6	1.5	1.4	1.5	1.4	1.4	1.3	1.3	1.2	1.3	1.3	1.4	1.4	1.8	2.3	2.5	2.7	2.8	3.1	3.3	3.4	3.2
2002	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.3	1.3	1.4	1.7	2.2	2.5	2.6	2.7	3.0	3.1	3.2	3.1
2003	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.3	1.3	1.4	1.7	2.2	2.4	2.5	2.6	2.9	3.0	3.1	3.0
2004	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.6	2.1	2.3	2.5	2.5	2.8	2.9	3.0	2.9
2005	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.3	1.3	1.4	1.6	2.1	2.3	2.4	2.5	2.8	2.9	3.0	2.8
2006	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.6	2.0	2.2	2.3	2.4	2.6	2.8	2.8	2.7
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1984	5.2																						
1985	5.0	4.8																					
1986	5.5	5.7	6.6																				
1987	5.6	5.7	6.2	5.7																			
1988	4.7	4.6	4.5	3.5	1.4																		
1989	4.4	4.3	4.1	3.3	2.1	2.8																	
1990	4.1	4.0	3.8	3.1	2.2	2.6	2.5																
1991	4.2	4.1	3.9	3.4	2.8	3.3	3.6	4.6															
1992	4.5	4.4	4.3	4.0	3.6	4.2	4.6	5.7	6.8														
1993	4.2	4.1	4.1	3.7	3.4	3.8	4.0	4.5	4.5	2.2													
1994	3.9	3.8	3.7	3.3	3.0	3.3	3.4	3.6	3.2	1.5	0.8												
1995	3.7	3.5	3.4	3.0	2.7	2.9	2.9	3.0	2.6	1.2	0.7	0.7											
1996	3.4	3.2	3.1	2.7	2.4	2.5	2.5	2.5	2.1	0.9	0.5	0.4	0.2										
1997	3.1	2.9	2.8	2.4	2.1	2.2	2.1	2.1	1.7	0.6	0.3	0.1	(0.2)	(0.5)									
1998	3.2	3.0	2.9	2.6	2.3	2.4	2.4	2.3	2.0	1.2	1.0	1.1	1.2	1.8	4.2								
1999	3.2	3.0	2.9	2.6	2.4	2.5	2.4	2.4	2.2	1.5	1.4	1.5	1.8	2.3	3.7	3.3							
2000	3.1	3.0	2.9	2.6	2.4	2.5	2.4	2.4	2.2	1.6	1.6	1.7	1.9	2.3	3.3	2.9	2.5						
2001	3.2	3.1	3.0	2.7	2.5	2.6	2.6	2.6	2.4	1.9	1.9	2.0	2.2	2.7	3.5	3.3	3.2	4.0					
2002	3.0	2.9	2.8	2.6	2.4	2.4	2.4	2.4	2.2	1.8	1.7	1.8	2.0	2.3	2.9	2.5	2.3	2.2	0.4				
2003	2.9	2.8	2.7	2.5	2.2	2.3	2.3	2.3	2.1	1.6	1.6	1.7	1.8	2.0	2.5	2.1	1.8	1.6	0.5	0.5			
2004	2.8	2.7	2.6	2.4	2.2	2.2	2.2	2.1	2.0	1.6	1.5	1.6	1.7	1.9	2.2	1.9	1.6	1.4	0.6	0.6	0.7		
2005	2.8	2.6	2.5	2.3	2.1	2.2	2.1	2.1	1.9	1.6	1.5	1.6	1.7	1.8	2.2	1.9	1.6	1.5	0.8	1.0	1.2	1.7	
2006	2.6	2.5	2.4	2.2	2.0	2.1	2.0	2.0	1.8	1.5	1.4	1.4	1.5	1.7	1.9	1.6	1.4	1.2	0.7	0.7	0.8	0.8	(0.1)
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

REAL VALUE OF £100 INVESTED

The dates along the top (and bottom) are those on which each portfolio starts. Those down the side are the dates to which the change in real value is calculated. Reading the top figure in each column diagonally down the table gives the growth in each year since 1960. The table can be used to see the real growth over any period; thus an investment of £100 made at the end of 1960 would have grown to £101 (allowing for reinvestment of income and the effect of inflation) in one year but after three years (up to the end of 1963) would have reached £109 in real terms. Each figure on the bottom line of the table shows the real growth up to December 2006 from the year shown below the figure.

INVESTMENT TO END YEAR (rows)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
1961	101																						
1962	105	103																					
1963	109	107	104																				
1964	110	108	105	101																			
1965	112	110	107	103	102																		
1966	115	114	110	106	105	103																	
1967	121	119	115	111	110	108	105																
1968	123	121	117	113	112	109	106	101															
1969	127	125	121	116	115	113	110	105	103														
1970	127	126	122	117	116	114	111	106	104	101													
1971	127	125	121	116	115	113	110	105	103	100	99												
1972	127	125	121	117	116	114	110	105	104	100	100	100											
1973	126	124	120	116	115	113	109	105	103	100	99	100	99										
1974	118	116	112	108	107	105	102	97	96	93	92	93	92	93									
1975	105	103	100	96	95	93	91	87	85	82	82	83	82	83	89								
1976	101	99	96	92	92	90	87	83	82	79	79	79	79	80	85	96							
1977	99	98	95	91	90	89	86	82	81	78	78	78	78	79	84	95	99						
1978	100	99	96	92	91	89	87	83	82	79	79	79	79	79	85	96	100	101					
1979	96	95	91	88	87	86	83	79	78	76	75	76	75	76	81	92	95	97	96				
1980	96	94	91	88	87	86	83	79	78	76	75	76	75	76	81	92	95	97	96	100			
1981	97	95	92	89	88	86	84	80	79	76	76	76	76	76	82	92	96	97	96	101	101		
1982	103	101	98	94	94	92	89	85	84	81	81	81	81	81	87	98	102	104	103	107	107	106	
1983	107	105	102	98	97	96	93	89	87	84	84	84	84	85	91	102	106	108	107	112	112	111	104
1984	112	111	107	103	102	100	98	93	92	89	88	89	88	89	96	108	112	113	112	117	117	117	109
1985	118	116	112	108	107	105	102	98	96	93	92	93	93	93	100	113	117	119	118	123	123	122	115
1986	126	124	120	115	114	112	109	104	103	99	99	99	99	100	107	120	125	127	126	131	131	130	122
1987	133	131	127	122	121	119	115	110	108	105	104	105	105	105	113	127	132	134	133	139	139	138	129
1988	135	133	129	124	123	120	117	112	110	106	106	106	106	107	115	129	134	136	135	141	141	140	131
1989	138	137	132	127	126	124	120	115	113	109	109	109	109	110	118	132	138	140	138	144	145	144	135
1990	142	140	135	130	129	127	123	118	116	112	111	112	112	112	121	136	141	143	142	148	148	147	138
1991	149	146	142	136	135	133	129	123	121	117	116	117	117	118	126	142	148	150	148	155	155	154	145
1992	159	156	151	146	144	142	138	131	129	125	124	125	125	126	135	152	158	160	158	166	166	164	154
1993	162	160	155	149	148	145	141	134	132	128	127	128	127	128	138	155	161	163	162	169	169	168	158
1994	163	161	156	150	149	146	142	135	133	129	128	129	128	129	139	156	163	165	163	170	171	169	159
1995	164	162	157	151	150	147	143	136	134	130	129	130	129	130	140	157	164	166	164	172	172	170	160
1996	165	162	157	151	150	147	143	136	134	130	129	130	130	131	140	158	164	166	165	172	172	171	160
1997	164	162	156	150	149	146	142	136	134	129	129	129	129	130	139	157	163	165	164	171	171	170	160
1998	171	168	163	157	155	152	148	141	139	135	134	135	134	135	145	163	170	172	170	178	178	177	166
1999	176	174	168	162	161	157	153	146	144	139	138	139	139	140	150	169	175	178	176	184	184	183	172
2000	181	178	172	166	165	161	157	150	148	143	142	143	142	143	154	173	180	182	180	189	189	187	176
2001	188	185	179	173	171	168	163	156	153	148	147	148	148	149	160	180	187	189	188	196	196	195	183
2002	189	186	180	173	172	169	164	156	154	149	148	149	148	150	160	181	188	190	188	197	197	196	184
2003	190	187	181	174	173	169	164	157	155	150	149	150	149	150	161	181	189	191	189	198	198	197	185
2004	191	188	182	175	174	171	166	158	156	151	150	151	150	151	162	183	190	193	191	199	200	198	186
2005	194	192	185	178	177	174	168	161	159	153	152	154	153	154	165	186	193	196	194	203	203	201	189
2006	194	191	185	178	177	173	168	161	158	153	152	153	153	154	165	186	193	196	194	203	203	201	189
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1984	105																						
1985	110	105																					
1986	118	112	107																				
1987	124	118	113	106																			
1988	126	120	114	107	101																		
1989	130	123	117	110	104	103																	
1990	133	126	120	113	107	105	102																
1991	139	132	126	118	112	110	107	105															
1992	148	141	135	126	119	118	115	112	107														
1993	152	144	137	129	122	120	117	114	109	102													
1994	153	145	139	130	123	121	118	115	110	103	101												
1995	154	146	139	131	124	122	119	116	111	104	101	101											
1996	154	146	140	131	124	122	119	116	111	104	102	101	100										
1997	153	146	139	130	123	122	118	115	110	103	101	100	100	99									
1998	160	152	145	136	128	127	123	120	115	108	105	104	104	104	104								
1999	165	157	150	140	133	131	127	124	119	111	109	108	107	107	108	103							
2000	169	161	153	144	136	134	130	127	122	114	111	111	110	110	110	106	102						
2001	176	167	159	150	141	139	136	132	127	118	116	115	114	114	115	110	107	104					
2002	176	168	160	150	142	140	136	133	127	119	116	116	115	115	115	111	107	104	100				
2003	177	169	161	151	143	141	137	134	128	120	117	116	115	115	116	111	108	105	101	101			
2004	179	170	162	152	144	142	138	135	129	120	118	117	116	116	117	112	108	106	102	101	101		
2005	182	173	165	155	146	144	140	137	131	122	120	119	118	118	119	114	110	108	103	103	102	102	
2006	182	173	165	154	146	144	140	137	131	122	120	119	118	118	119	114	110	107	103	103	102	102	100
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

REAL RETURN ON INDEX-LINKED GILTS

AVERAGE ANNUAL REAL RATE OF RETURN

GROSS INCOME RE-INVESTED

INVESTMENT FROM END YEAR

INVESTMENT TO END YEAR

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1983	(4.3)																							
1984	(1.2)	1.9																						
1985	(2.7)	(1.9)	(5.5)																					
1986	(1.5)	(0.5)	(1.7)	2.3																				
1987	(0.6)	0.4	(0.1)	2.7	3.1																			
1988	0.6	1.6	1.5	3.9	4.8	6.5																		
1989	1.4	2.3	2.4	4.5	5.3	6.4	6.3																	
1990	0.6	1.3	1.2	2.7	2.7	2.6	0.8	(4.5)																
1991	0.6	1.3	1.2	2.3	2.3	2.2	0.7	(1.9)	0.7															
1992	1.9	2.6	2.7	3.9	4.2	4.4	3.9	3.2	7.2	14.1														
1993	3.3	4.1	4.4	5.7	6.2	6.7	6.8	6.9	11.0	16.5	18.9													
1994	2.1	2.7	2.8	3.8	3.9	4.1	3.7	3.1	5.2	6.7	3.1	(10.5)												
1995	2.6	3.2	3.3	4.2	4.4	4.6	4.3	4.0	5.8	7.1	4.9	(1.5)	8.5											
1996	2.7	3.2	3.3	4.2	4.4	4.5	4.3	4.0	5.5	6.5	4.6	0.3	6.2	4.0										
1997	3.1	3.7	3.8	4.6	4.8	5.0	4.8	4.7	6.0	7.0	5.6	2.5	7.3	6.7	9.4									
1998	3.9	4.5	4.7	5.5	5.8	6.1	6.0	6.0	7.4	8.3	7.4	5.3	9.6	10.0	13.2	17.1								
1999	3.9	4.4	4.6	5.4	5.6	5.8	5.7	5.7	6.9	7.7	6.8	4.9	8.3	8.3	9.7	9.9	3.2							
2000	3.7	4.2	4.3	5.0	5.2	5.4	5.3	5.2	6.2	6.8	5.9	4.2	6.9	6.6	7.2	6.5	1.6	0.1						
2001	3.4	3.8	4.0	4.6	4.7	4.8	4.7	4.6	5.5	5.9	5.1	3.5	5.6	5.2	5.4	4.4	0.5	(0.7)	(1.6)					
2002	3.5	3.9	4.0	4.6	4.7	4.9	4.7	4.6	5.4	5.9	5.1	3.6	5.6	5.2	5.4	4.6	1.7	1.2	1.7	5.1				
2003	3.5	3.9	4.0	4.6	4.7	4.8	4.7	4.6	5.3	5.7	5.0	3.7	5.4	5.0	5.1	4.4	2.1	1.8	2.4	4.5	3.9			
2004	3.6	4.0	4.1	4.6	4.7	4.8	4.7	4.6	5.3	5.6	5.0	3.8	5.3	5.0	5.1	4.5	2.6	2.4	3.0	4.6	4.4	4.9		
2005	3.7	4.1	4.2	4.7	4.8	4.9	4.8	4.7	5.4	5.7	5.1	4.0	5.5	5.2	5.3	4.8	3.2	3.2	3.8	5.2	5.2	5.8	6.7	
2006	3.5	3.8	3.9	4.4	4.5	4.5	4.4	4.3	4.9	5.2	4.6	3.5	4.8	4.5	4.5	4.0	2.5	2.4	2.8	3.7	3.3	3.1	2.2	(2.1)
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

REAL VALUE OF £100 INVESTED

GROSS INCOME RE-INVESTED

INVESTMENT FROM END YEAR

INVESTMENT TO END YEAR

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1983	96																							
1984	98	102																						
1985	92	96	94																					
1986	94	98	97	102																				
1987	97	102	100	105	103																			
1988	103	108	106	112	110	106																		
1989	110	115	113	119	117	113	106																	
1990	105	110	108	114	111	108	102	95																
1991	106	111	108	115	112	109	102	96	101															
1992	121	126	124	131	128	124	117	110	115	114														
1993	144	150	147	156	152	148	139	130	137	136	119													
1994	128	134	132	139	136	132	124	117	122	121	106	89												
1995	139	146	143	151	148	143	135	127	133	132	115	97	108											
1996	145	151	148	157	154	149	140	132	138	137	120	101	113	104										
1997	158	166	162	172	168	163	153	144	151	150	131	110	123	114	109									
1998	186	194	190	201	197	191	179	169	177	175	154	129	144	133	128	117								
1999	191	200	196	208	203	197	185	174	182	181	158	133	149	137	132	121	103							
2000	192	200	196	208	203	197	185	174	182	181	159	133	149	138	132	121	103	100						
2001	189	197	193	205	200	194	182	171	179	178	156	131	147	135	130	119	102	99	98					
2002	198	207	203	215	210	204	191	180	189	187	164	138	154	142	137	125	107	104	103	105				
2003	206	215	211	223	218	212	199	187	196	194	170	143	160	148	142	130	111	108	107	109	104			
2004	216	226	221	234	229	222	209	196	206	204	179	150	168	155	149	136	116	113	113	115	109	105		
2005	231	241	236	250	244	237	223	210	219	218	191	161	179	165	159	145	124	120	120	122	116	112	107	
2006	226	236	231	245	239	232	218	205	215	213	187	157	176	162	156	142	122	118	118	120	114	110	105	98
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

REAL RETURN ON CORPORATE BONDS

AVERAGE ANNUAL REAL RATE OF RETURN

GROSS INCOME RE-INVESTED

INVESTMENT FROM END YEAR

INVESTMENT TO END YEAR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1991	17.1															
1992	17.2	17.3														
1993	23.1	26.2	35.9													
1994	13.0	11.7	9.0	(12.5)												
1995	13.2	12.2	10.6	(0.3)	13.7											
1996	12.4	11.5	10.1	2.7	11.3	8.9										
1997	13.4	12.8	11.9	6.6	13.8	13.9	19.1									
1998	14.1	13.7	13.1	9.0	15.2	15.7	19.3	19.5								
1999	12.2	11.6	10.8	7.1	11.5	10.9	11.6	8.0	(2.3)							
2000	11.5	10.9	10.1	6.8	10.5	9.8	10.0	7.2	1.5	5.5						
2001	11.0	10.4	9.7	6.8	9.9	9.2	9.3	7.0	3.1	6.0	6.5					
2002	10.6	10.0	9.3	6.7	9.4	8.8	8.8	6.8	3.8	6.0	6.2	6.0				
2003	10.3	9.7	9.1	6.7	9.1	8.5	8.5	6.8	4.4	6.2	6.4	6.3	6.7			
2004	9.8	9.2	8.6	6.4	8.5	7.9	7.8	6.3	4.2	5.6	5.6	5.3	5.0	3.3		
2005	9.8	9.3	8.7	6.7	8.6	8.1	8.0	6.7	5.0	6.3	6.4	6.4	6.5	6.5	9.8	
2006	8.8	8.3	7.7	5.8	7.4	6.9	6.7	5.4	3.8	4.7	4.5	4.1	3.7	2.7	2.4	(4.5)
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

REAL VALUE OF £100 INVESTED

GROSS INCOME RE-INVESTED

INVESTMENT FROM END YEAR

INVESTMENT TO END YEAR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1991	117															
1992	137	117														
1993	187	159	136													
1994	163	139	119	87												
1995	186	158	135	99	114											
1996	202	173	147	108	124	109										
1997	241	206	175	129	147	130	119									
1998	288	246	209	154	176	155	142	119								
1999	281	240	205	151	172	151	139	117	98							
2000	296	253	216	159	182	160	147	123	103	106						
2001	316	269	230	169	193	170	156	131	110	112	106					
2002	334	286	243	179	205	180	165	139	116	119	113	106				
2003	357	305	260	191	219	192	177	148	124	127	120	113	107			
2004	368	315	268	197	226	198	182	153	128	131	124	117	110	103		
2005	404	345	294	217	248	218	200	168	141	144	136	128	121	113	110	
2006	386	330	281	207	237	208	191	160	134	138	130	122	116	108	105	96
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

UK real return on equities – gross income re-invested

(annual average rates of return between year ends)

INVESTMENT FROM END YEAR (columns) / INVESTMENT TO END YEAR (rows)

	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
1900	11.5
1901	3.7	(3.5)
1902	3.6	(0.1)	3.5
1903	3.2	0.5	2.6	1.8
1904	4.9	3.4	5.7	6.9	12.3
1905	4.8	3.5	5.3	5.9	8.0	3.8
1906	6.6	5.8	7.8	8.9	11.4	11.0	18.6
1907	4.5	3.6	4.8	5.1	5.9	3.9	3.9	(8.9)
1908	4.2	3.4	4.4	4.5	5.1	3.4	3.2	(3.7)	1.9
1909	4.9	4.2	5.2	5.4	6.1	4.8	5.1	1.0	6.3	10.9
1910	4.6	4.0	4.8	5.0	5.5	4.4	4.5	1.2	4.9	6.4	2.1
1911	4.1	3.5	4.2	4.3	4.6	3.5	3.5	0.7	3.3	3.7	0.3	(1.5)
1912	3.8	3.2	3.8	3.8	4.1	3.1	3.0	0.6	2.6	2.8	0.2	(0.7)	0.0
1913	3.3	2.7	3.2	3.2	3.3	2.3	2.2	0.0	1.6	1.5	(0.7)	(1.6)	(1.7)	(3.4)
1914	3.0	2.4	2.9	2.8	2.9	2.1	1.9	(0.1)	1.3	1.2	(0.7)	(1.3)	(1.3)	(2.0)	(0.5)
1915	1.6	1.0	1.3	1.2	1.1	0.1	(0.2)	(2.1)	(1.2)	(1.6)	(3.6)	(4.7)	(5.5)	(7.3)	(9.1)	(17.0)
1916	0.4	(0.3)	(0.0)	(0.3)	(0.4)	(1.4)	(1.9)	(3.7)	(3.2)	(3.8)	(5.7)	(6.9)	(8.0)	(9.9)	(11.9)	(17.2)	(17.3)
1917	(0.2)	(0.8)	(0.7)	(0.9)	(1.1)	(2.1)	(2.6)	(4.3)	(3.8)	(4.4)	(6.2)	(7.3)	(8.3)	(9.8)	(11.4)	(14.7)	(13.5)	(9.6)
1918	0.1	(0.5)	(0.3)	(0.6)	(0.7)	(1.6)	(2.0)	(3.5)	(3.0)	(3.5)	(5.0)	(5.9)	(6.5)	(7.5)	(8.3)	(10.2)	(7.7)	(2.6)	5.0
1919	0.4	(0.1)	0.1	(0.1)	(0.2)	(1.0)	(1.4)	(2.7)	(2.2)	(2.6)	(3.8)	(4.5)	(4.8)	(5.5)	(5.9)	(6.9)	(4.2)	0.7	6.2	7.4
1920	(1.6)	(2.2)	(2.1)	(2.4)	(2.6)	(3.5)	(4.0)	(5.4)	(5.1)	(5.7)	(7.1)	(7.9)	(8.6)	(9.7)	(10.5)	(12.1)	(11.1)	(9.4)	(9.4)	(15.8)	(34.0)
1921	(0.2)	(0.7)	(0.5)	(0.8)	(0.9)	(1.6)	(2.0)	(3.2)	(2.8)	(3.1)	(4.2)	(4.7)	(5.1)	(5.6)	(5.9)	(6.6)	(4.8)	(2.1)	(0.1)	(1.7)	(6.0)	34.0
1922	1.3	0.9	1.1	0.9	0.9	0.3	0.1	(1.0)	(0.4)	(0.6)	(1.4)	(1.7)	(1.7)	(1.9)	(1.7)	(1.8)	0.5	3.9	6.8	7.2	7.2	36.6	39.3
1923	1.4	0.9	1.1	1.0	1.0	0.4	0.2	(0.7)	(0.2)	(0.3)	(1.1)	(1.3)	(1.3)	(1.4)	(1.3)	(1.3)	0.8	3.7	6.1	6.3	6.1	24.3	19.7	2.8
1924	2.0	1.6	1.8	1.7	1.7	1.2	1.1	0.2	0.8	0.7	0.1	(0.1)	0.0	0.0	0.3	0.4	2.6	5.4	7.7	8.1	8.3	22.6	19.0	10.0	17.6
1925	2.5	2.2	2.4	2.4	2.4	1.9	1.8	1.0	1.6	1.6	1.0	1.0	1.2	1.2	1.6	1.8	3.9	6.6	8.8	9.4	9.7	21.5	18.6	12.4	17.4	17.3
1926	2.6	2.3	2.5	2.5	2.5	2.1	2.0	1.3	1.8	1.8	1.3	1.3	1.4	1.5	1.9	2.1	4.1	6.5	8.5	8.9	9.1	18.7	15.8	10.6	13.3	11.2	5.5
1927	3.0	2.7	3.0	3.0	3.0	2.6	2.6	1.9	2.4	2.5	2.0	2.0	2.2	2.4	2.8	3.1	4.9	7.2	9.1	9.5	9.8	18.1	15.6	11.4	13.7	12.4	10.0	14.8
1928	3.5	3.2	3.5	3.5	3.5	3.2	3.2	2.5	3.1	3.2	2.8	2.8	3.1	3.2	3.7	4.0	5.8	8.0	9.8	10.3	10.6	18.0	15.9	12.4	14.4	13.6	12.4	16.0	17.3
1929	2.8	2.6	2.8	2.8	2.8	2.4	2.4	1.7	2.2	2.3	1.8	1.8	2.0	2.1	2.5	2.7	4.3	6.1	7.6	7.8	7.8	13.9	11.6	8.1	9.0	7.4	5.1	4.9	0.3	(14.1)
1930	2.9	2.6	2.8	2.8	2.8	2.5	2.4	1.8	2.3	2.3	1.9	1.9	2.1	2.2	2.5	2.7	4.2	5.9	7.2	7.4	7.4	12.8	10.6	7.5	8.2	6.7	4.7	4.5	1.3	(5.9)	3.1
1931	2.2	1.9	2.1	2.1	2.1	1.7	1.6	1.0	1.4	1.4	1.0	1.0	1.1	1.1	1.4	1.5	2.8	4.3	5.4	5.4	5.2	9.8	7.6	4.6	4.8	3.1	0.9	(0.0)	(3.4)	(9.5)	(7.0)
1932	3.1	2.9	3.1	3.1	3.1	2.8	2.8	2.2	2.7	2.7	2.4	2.4	2.6	2.7	3.1	3.3	4.6	6.1	7.3	7.4	7.5	11.9	10.1	7.5	8.1	6.9	5.5	5.5	3.8	0.7	6.1
1933	3.7	3.5	3.7	3.7	3.8	3.5	3.5	3.0	3.5	3.5	3.2	3.3	3.5	3.7	4.0	4.3	5.6	7.2	8.3	8.5	8.6	12.8	11.2	9.0	9.6	8.8	7.8	8.1	7.0	5.1	10.5
1934	4.0	3.8	4.0	4.0	4.1	3.8	3.8	3.3	3.8	3.9	3.6	3.7	3.9	4.1	4.5	4.7	6.0	7.5	8.6	8.8	8.9	12.9	11.4	9.3	9.9	9.2	8.3	8.7	7.8	6.4	11.0
1935	4.2	4.0	4.2	4.2	4.3	4.1	4.1	3.6	4.1	4.2	3.9	4.0	4.2	4.4	4.8	5.0	6.3	7.7	8.7	9.0	9.1	12.8	11.4	9.5	10.1	9.4	8.7	9.0	8.3	7.1	11.1
1936	4.5	4.3	4.5	4.6	4.6	4.4	4.4	4.0	4.5	4.6	4.3	4.4	4.7	4.9	5.2	5.5	6.7	8.1	9.1	9.3	9.5	13.0	11.7	9.9	10.5	9.9	9.3	9.7	9.1	8.2	11.8
1937	3.8	3.6	3.8	3.8	3.9	3.7	3.7	3.2	3.6	3.7	3.4	3.5	3.7	3.8	4.2	4.4	5.5	6.7	7.6	7.7	7.7	10.9	9.6	7.8	8.2	7.5	6.7	6.8	6.1	4.9	7.6
1938	3.5	3.3	3.5	3.5	3.5	3.3	3.3	2.8	3.2	3.3	3.0	3.1	3.2	3.4	3.6	3.8	4.8	6.0	6.8	6.9	6.8	9.7	8.5	6.8	7.0	6.3	5.5	5.5	4.7	3.6	5.7
1939	3.2	3.0	3.2	3.2	3.2	3.0	2.9	2.5	2.9	2.9	2.7	2.7	2.8	2.9	3.2	3.3	4.3	5.3	6.1	6.1	6.1	8.7	7.5	5.9	6.0	5.3	4.5	4.4	3.6	2.5	4.3
1940	2.7	2.5	2.7	2.6	2.7	2.4	2.4	1.9	2.3	2.3	2.0	2.0	2.1	2.2	2.4	2.5	3.4	4.4	5.0	5.0	4.9	7.4	6.1	4.6	4.7	3.9	3.1	2.9	2.0	0.8	2.3
1941	3.1	2.9	3.0	3.0	3.1	2.8	2.8	2.4	2.7	2.8	2.5	2.5	2.7	2.8	3.0	3.1	4.0	4.9	5.6	5.6	5.5	7.9	6.8	5.3	5.4	4.7	4.0	3.9	3.2	2.2	3.6
1942	3.4	3.2	3.4	3.4	3.4	3.2	3.2	2.8	3.1	3.2	3.0	3.0	3.1	3.2	3.5	3.6	4.5	5.4	6.1	6.1	6.1	8.4	7.3	5.9	6.1	5.4	4.8	4.7	4.1	3.2	4.7
1943	3.6	3.4	3.6	3.6	3.6	3.4	3.4	3.0	3.4	3.4	3.2	3.3	3.4	3.5	3.8	3.9	4.7	5.7	6.3	6.3	6.3	8.5	7.5	6.2	6.4	5.8	5.2	5.2	4.6	3.8	5.2
1944	3.8	3.6	3.8	3.8	3.8	3.6	3.6	3.2	3.6	3.6	3.4	3.5	3.6	3.8	4.0	4.1	5.0	5.9	6.5	6.5	6.5	8.6	7.7	6.4	6.6	6.1	5.5	5.5	5.0	4.3	5.6
1945	3.8	3.6	3.8	3.8	3.8	3.6	3.6	3.3	3.6	3.7	3.5	3.5	3.7	3.8	4.0	4.2	5.0	5.8	6.4	6.5	6.4	8.5	7.5	6.3	6.5	6.0	5.5	5.5	5.0	4.3	5.6
1946	4.1	3.9	4.1	4.1	4.1	4.0	4.0	3.6	4.0	4.0	3.8	3.9	4.0	4.2	4.4	4.6	5.3	6.2	6.8	6.8	6.8	8.8	7.9	6.8	6.9	6.5	6.0	6.0	5.6	5.0	6.2
1947	3.9	3.7	3.9	3.9	3.9	3.7	3.7	3.4	3.7	3.8	3.6	3.6	3.8	3.9	4.1	4.2	5.0	5.8	6.4	6.4	6.4	8.3	7.4	6.3	6.4	5.9	5.5	5.5	5.0	4.4	5.5
1948	3.6	3.4	3.6	3.6	3.6	3.4	3.4	3.1	3.4	3.4	3.3	3.3	3.4	3.5	3.7	3.8	4.6	5.3	5.8	5.9	5.8	7.6	6.8	5.7	5.8	5.3	4.8	4.8	4.3	3.7	4.8
1949	3.3	3.2	3.3	3.3	3.3	3.1	3.1	2.8	3.1	3.1	2.9	3.0	3.1	3.2	3.3	3.5	4.1	4.9	5.3	5.4	5.3	7.0	6.1	5.1	5.2	4.7	4.2	4.2	3.7	3.1	4.0
1950	3.4	3.2	3.4	3.4	3.4	3.2	3.2	2.9	3.2	3.2	3.0	3.1	3.2	3.3	3.5	3.6	4.2	4.9	5.4	5.4	5.4	7.0	6.2	5.2	5.3	4.8	4.3	4.3	3.9	3.3	4.2
1951	3.3	3.1	3.3	3.2	3.3	3.1	3.1	2.8	3.0	3.1	2.9	2.9	3.0	3.1	3.3	3.4	4.0	4.7	5.1	5.2	5.1	6.7	5.9	4.9	4.9	4.5	4.0	4.0	3.6	3.0	3.9
1952	3.1	2.9	3.1	3.1	3.1	2.9	2.9	2.6	2.8	2.9	2.7	2.7	2.8	2.9	3.0	3.1	3.7	4.4	4.8	4.8	4.7	6.3	5.5	4.5	4.5	4.1	3.6	3.6	3.1	2.6	3.4
1953	3.4	3.3	3.4	3.4	3.4	3.3	3.3	3.0	3.2	3.3	3.1	3.1	3.2	3.3	3.5	3.6	4.2	4.8	5.3	5.3	5.2	6.7	6.0	5.0	5.1	4.7	4.3	4.2	3.8	3.3	4.1
1954	4.0	3.9	4.0	4.1	4.1	3.9	3.9	3.7	3.9	4.0	3.8	3.9	4.0	4.1	4.3	4.4	5.0	5.7	6.1	6.2	6.1	7.6	6.9	6.0	6.2	5.8	5.4	5.4	5.1	4.6	5.5
1955	4.0	3.9	4.1	4.1	4.1	4.0	4.0	3.7	4.0	4.0	3.9	3.9	4.0	4.1	4.3	4.4	5.0	5.7	6.1	6.1	6.1	7.6	6.9	6.0	6.1	5.8	5.4	5.4	5.1	4.6	5.4
1956	3.7	3.6	3.7	3.8	3.8	3.6	3.6	3.4	3.6	3.7	3.5	3.5	3.6	3.7	3.9	4.0	4.6	5.2	5.6	5.6	5.6	7.0	6.3	5.4	5.5	5.2	4.8	4.8	4.4	4.0	4.8
1957	3.6	3.4	3.6	3.6	3.6	3.5	3.4	3.2	3.4	3.5	3.3	3.3	3.4	3.5	3.7	3.8	4.3	4.9	5.3	5.3	5.3	6.6	5.9	5.1	5.2	4.8	4.5	4.4	4.1	3.7	4.4
1958	4.2	4.1	4.2	4.2	4.2	4.1	4.1	3.8	4.1	4.2	4.0	4.1	4.2	4.3	4.5	4.6	5.1	5.7	6.1	6.2	6.1	7.5	6.8	6.1	6.2	5.8	5.5	5.5	5.2	4.8	5.6
1959	4.9	4.8	4.9	4.9	5.0	4.9	4.9	4.6	4.9	5.0	4.9	4.9	5.1	5.2	5.4	5.5	6.1	6.7	7.1	7.2	7.2	8.5	7.9	7.1	7.3	7.0	6.7	6.7	6.5	6.2	6.9
1960	4.8	4.7	4.8	4.8	4.9	4.8	4.8	4.5	4.8	4.9	4.8	4.8	4.9	5.1	5.2	5.4	5.9	6.5	6.9	7.0	7.0	8.3	7.7	7.0	7.1	6.8	6.5	6.5	6.3	6.0	6.7
1961	4.7	4.6	4.7	4.7	4.8	4.6	4.6	4.4	4.7	4.7	4.6	4.7	4.8	4.9	5.1	5.2	5.7	6.3	6.7	6.7	6.7	8.0	7.4	6.7	6.8	6.5	6.2	6.3	6.0	5.7	6.4
1962	4.5	4.4	4.6	4.6	4.6	4.5	4.5	4.3	4.5	4.6	4.5	4.5	4.6	4.7	4.9	5.0	5.6	6.1	6.5	6.5	6.5	7.7	7.2	6.5	6.6	6.3	6.0	6.0	5.8	5.5	6.1
1963	4.7	4.6	4.8	4.8	4.8	4.7	4.7	4.5	4.8	4.8	4.7	4.8	4.9	5.0	5.2	5.3	5.8	6.4	6.7	6.8	6.8	8.0	7.4	6.7	6.8	6.6	6.3	6.3	6.1	5.8	6.4
1964	4.5	4.4	4.5	4.5	4.6	4.5	4.5	4.2	4.5	4.5	4.4	4.5	4.6	4.7	4.8	5.0	5.5	6.0	6.4	6.4	6.4	7.5	7.0	6.3	6.4	6.1	5.8	5.9	5.6	5.3	5.9
1965	4.5	4.4	4.6	4.6	4.6	4.5	4.5	4.3	4.5	4.6	4.5	4.5	4.6	4.7	4.9	5.0	5.5	6.0	6.4	6.4	6.4	7.5	7.0	6.3	6.4	6.1	5.9	5.9	5.7	5.4	6.0
1966	4.3	4.2	4.4	4.4	4.4	4.3	4.3	4.1	4.3	4.4	4.2	4.3	4.4	4.5	4.6	4.7	5.2	5.7	6.1	6.1	6.1	7.2	6.6	6.0	6.0	5.8	5.5	5.5	5.3	5.0	5.6
1967	4.7	4.6	4.7	4.7	4.8	4.7	4.7	4.5	4.7	4.8	4.7	4.7	4.8	4.9	5.1	5.2	5.7	6.2	6.5	6.5	6.5	7.6	7.1	6.5	6.6	6.3	6.1	6.1	5.9	5.6	6.2
1968	5.1	5.0	5.2	5.2	5.3	5.1	5.2	5.0	5.2	5.3	5.2	5.2	5.3	5.4	5.6	5.7	6.2	6.7	7.1	7.1	7.1	8.2	7.7	7.1	7.2	7.0	6.8	6.8	6.6	6.3	6.9
1969	4.8	4.7	4.8	4.9	4.9	4.8	4.8	4.6	4.8	4.9	4.8	4.8	4.9	5.0	5.2	5.3	5.8	6.3	6.6	6.6	6.6	7.6	7.2	6.6	6.6	6.4	6.2	6.2	6.0	5.7	6.3
1970	4.6	4.5	4.6	4.6	4.7	4.5	4.5	4.3	4.6	4.6	4.5	4.6	4.7	4.7	4.9	5.0	5.4	5.9	6.2	6.3	6.2	7.2	6.8	6.2	6.2	6.0	5.8	5.8	5.6	5.3	5.8
1971	4.9	4.8	5.0	5.0	5.0	4.9	4.9	4.8	5.0	5.0	4.9	5.0	5.1	5.2	5.3	5.4	5.9	6.4	6.7	6.7	6.7	7.7	7.3	6.7	6.8	6.5	6.3	6.3	6.2	5.9	6.4
1972	5.0	4.9	5.0	5.0	5.1	5.0	5.0	4.8	5.0	5.1	5.0	5.0	5.1	5.2	5.4	5.5	5.9	6.4	6.7	6.8	6.7	7.7	7.3	6.7	6.8	6.6	6.4	6.4	6.2	6.0	6.5
1973	4.3	4.2	4.3	4.3	4.4	4.3	4.3	4.1	4.3	4.3	4.2	4.2	4.3	4.4	4.5	4.6	5.0	5.5	5.8	5.8	5.8	6.7	6.2	5.7	5.7	5.5	5.3	5.3	5.1	4.8	5.3
1974	3.0	2.9	3.0	3.0	3.0	2.9	2.9	2.7	2.9	2.9	2.8	2.8	2.8	2.9	3.0	3.0	3.4	3.8	4.1	4.1	4.0	4.9	4.4	3.8	3.8	3.6	3.3	3.3	3.0	2.8	3.2
1975	3.9	3.8	3.9	3.9	4.0	3.9	3.9	3.7	3.9	3.9	3.8	3.8	3.9	4.0	4.1	4.2	4.6	5.0	5.2	5.3	5.2	6.1	5.7	5.1	5.1	4.9	4.7	4.7	4.5	4.2	4.7
1976	3.7	3.6	3.7	3.7	3.8	3.6	3.6	3.4	3.6	3.7	3.6	3.6	3.7	3.7	3.8	3.9	4.3	4.7	4.9	4.9	4.9	5.8	5.3	4.8	4.8	4.6	4.4	4.3	4.1	3.9	4.3
1977	4.1	4.0	4.1	4.1	4.1	4.0	4.0	3.8	4.0	4.0	3.9	4.0	4.0	4.1	4.2	4.3	4.7	5.1	5.4	5.4	5.3	6.2	5.8	5.2	5.3	5.1	4.8	4.8	4.6	4.4	4.8
1978	4.0	3.9	4.0	4.0	4.0	3.9	3.9	3.8	3.9	4.0	3.9	3.9	4.0	4.0	4.2	4.2	4.6	5.0	5.3	5.3	5.2	6.1	5.7	5.1	5.2	5.0	4.7	4.7	4.5	4.3	4.7
1979	3.9	3.8	3.9	3.9	3.9	3.8	3.8	3.6	3.8	3.8	3.7	3.8	3.8	3.9	4.0	4.1	4.5	4.8	5.1	5.1	5.1	5.9	5.5	5.0	5.0	4.8	4.6	4.5	4.4	4.1	4.5
1980	4.0	4.0	4.0	4.1	4.1	4.0	4.0	3.8	4.0	4.0	3.9	3.9	4.0	4.1	4.2	4.3	4.6	5.0	5.3	5.3	5.3	6.1	5.7	5.2	5.2	5.0	4.8	4.8	4.6	4.3	4.7
1981	4.0	3.9	4.0	4.0	4.0	3.9	3.9	3.8	3.9	4.0	3.9	3.9	4.0	4.0	4.2	4.2	4.6	5.0	5.2	5.2	5.2	6.0	5.6	5.1	5.1	4.9	4.7	4.7	4.5	4.3	4.7
1982	4.2	4.1	4.2	4.2	4.3	4.2	4.2	4.0	4.2	4.2	4.1	4.1	4.2	4.3	4.4	4.5	4.8	5.2	5.5	5.5	5.4	6.2	5.8	5.3	5.4	5.2	5.0	5.0	4.8	4.6	5.0
1983	4.4	4.3	4.4	4.4	4.5	4.4	4.4	4.2	4.4	4.4	4.3	4.4	4.5	4.5	4.6	4.7	5.1	5.4	5.7	5.7	5.7	6.5	6.1	5.6	5.6	5.5	5.3	5.3	5.1	4.9	5.3
1984	4.6	4.6	4.7	4.7	4.7	4.6	4.6	4.5	4.6	4.7	4.6	4.6	4.7	4.8	4.9	5.0	5.3	5.7	6.0	6.0	6.0	6.7	6.4	5.9	6.0	5.8	5.6	5.6	5.4	5.2	5.6
1985	4.7	4.7	4.8	4.8	4.8	4.7	4.7	4.6	4.8	4.8	4.7	4.8	4.8	4.9	5.0	5.1	5.5	5.8	6.1	6.1	6.1	6.9	6.5	6.0	6.1	5.9	5.7	5.7	5.6	5.4	5.8
1986	4.9	4.9	5.0	5.0	5.0	4.9	4.9	4.8	5.0	5.0	4.9	5.0	5.1	5.1	5.2	5.3	5.7	6.1	6.3	6.3	6.3	7.1	6.7	6.3	6.3	6.1	6.0	6.0	5.8	5.7	6.0
1987	4.9	4.9	5.0	5.0	5.0	4.9	4.9	4.8	5.0	5.0	4.9	5.0	5.1	5.1	5.2	5.3	5.7	6.0	6.3	6.3	6.3	7.0	6.7	6.2	6.3	6.1	6.0	6.0	5.8	5.6	6.0
1988	4.9	4.8	4.9	5.0	5.0	4.9	4.9	4.8	5.0	5.0	4.9	5.0	5.0	5.1	5.2	5.3	5.7	6.0	6.3	6.3	6.3	7.0	6.6	6.2	6.3	6.1	5.9	5.9	5.8	5.6	6.0
1989	5.1	5.1	5.2	5.2	5.2	5.1	5.2	5.0	5.2	5.2	5.2	5.2	5.3	5.4	5.5	5.6	5.9	6.3	6.5	6.5	6.5	7.3	6.9	6.5	6.5	6.4	6.2	6.2	6.1	5.9	6.3
1990	4.9	4.8	4.9	4.9	4.9	4.8	4.9	4.7	4.9	4.9	4.8	4.9	5.0	5.0	5.1	5.2	5.6	5.9	6.1	6.1	6.1	6.9	6.5	6.1	6.1	6.0	5.8	5.8	5.7	5.5	5.9
1991	5.0	4.9	5.0	5.0	5.0	5.0	5.0	4.8	5.0	5.0	5.0	5.0	5.1	5.2	5.3	5.4	5.7	6.0	6.3	6.3	6.3	7.0	6.6	6.2	6.3	6.1	5.9	6.0	5.8	5.7	6.0
1992	5.1	5.0	5.1	5.1	5.2	5.1	5.1	5.0	5.1	5.2	5.1	5.1	5.2	5.3	5.4	5.5	5.8	6.2	6.4	6.4	6.4	7.1	6.8	6.4	6.4	6.3	6.1	6.1	6.0	5.8	6.2
1993	5.3	5.2	5.3	5.3	5.4	5.3	5.3	5.2	5.4	5.4	5.3	5.4	5.5	5.5	5.6	5.7	6.0	6.4	6.6	6.6	6.6	7.3	7.0	6.6	6.7	6.5	6.4	6.4	6.3	6.1	6.4
1994	5.1	5.1	5.2	5.2	5.2	5.1	5.2	5.0	5.2	5.2	5.2	5.2	5.3	5.3	5.5	5.5	5.8	6.2	6.4	6.4	6.4	7.1	6.8	6.4	6.4	6.3	6.1	6.1	6.0	5.9	6.2
1995	5.3	5.2	5.3	5.3	5.4	5.3	5.3	5.2	5.3	5.4	5.3	5.3	5.4	5.5	5.6	5.7	6.0	6.3	6.6	6.6	6.6	7.3	6.9	6.5	6.6	6.5	6.3	6.3	6.2	6.0	6.4
1996	5.3	5.3	5.4	5.4	5.4	5.4	5.4	5.2	5.4	5.5	5.4	5.4	5.5	5.6	5.7	5.8	6.1	6.4	6.6	6.7	6.7	7.3	7.0	6.6	6.7	6.5	6.4	6.4	6.3	6.1	6.5
1997	5.5	5.4	5.5	5.5	5.6	5.5	5.5	5.4	5.6	5.6	5.5	5.6	5.7	5.7	5.8	5.9	6.2	6.6	6.8	6.8	6.8	7.5	7.2	6.8	6.8	6.7	6.6	6.6	6.5	6.3	6.7
1998	5.5	5.5	5.6	5.6	5.6	5.6	5.6	5.4	5.6	5.7	5.6	5.6	5.7	5.8	5.9	6.0	6.3	6.6	6.8	6.9	6.9	7.5	7.2	6.8	6.9	6.8	6.6	6.6	6.5	6.4	6.7
1999	5.7	5.6	5.7	5.7	5.8	5.7	5.7	5.6	5.8	5.8	5.8	5.8	5.9	6.0	6.1	6.2	6.5	6.8	7.0	7.0	7.0	7.7	7.4	7.0	7.1	6.9	6.8	6.8	6.7	6.6	6.9
2000	5.5	5.5	5.6	5.6	5.6	5.6	5.6	5.4	5.6	5.6	5.6	5.6	5.7	5.8	5.9	6.0	6.3	6.6	6.8	6.8	6.8	7.5	7.2	6.8	6.9	6.7	6.6	6.6	6.5	6.4	6.7
2001	5.3	5.3	5.3	5.4	5.4	5.3	5.3	5.2	5.4	5.4	5.4	5.4	5.5	5.5	5.6	5.7	6.0	6.3	6.5	6.6	6.5	7.2	6.9	6.5	6.6	6.4	6.3	6.3	6.2	6.0	6.4
2002	5.0	4.9	5.0	5.0	5.0	5.0	5.0	4.9	5.0	5.0	5.0	5.0	5.1	5.1	5.2	5.3	5.6	5.9	6.1	6.1	6.1	6.7	6.4	6.1	6.1	6.0	5.8	5.8	5.7	5.6	5.9
2003	5.1	5.0	5.1	5.1	5.2	5.1	5.1	5.0	5.1	5.2	5.1	5.1	5.2	5.3	5.4	5.4	5.7	6.0	6.2	6.2	6.2	6.8	6.5	6.2	6.2	6.1	6.0	6.0	5.9	5.7	6.0
2004	5.1	5.1	5.1	5.2	5.2	5.1	5.1	5.0	5.2	5.2	5.1	5.2	5.2	5.3	5.4	5.5	5.8	6.1	6.2	6.3	6.3	6.9	6.6	6.2	6.3	6.1	6.0	6.0	5.9	5.7	6.0
2005	5.2	5.2	5.3	5.3	5.3	5.3	5.3	5.1	5.3	5.3	5.3	5.3	5.4	5.4	5.5	5.6	5.9	6.2	6.4	6.4	6.4	7.0	6.7	6.4	6.4	6.3	6.1	6.2	6.0	5.9	6.2
2006	5.3	5.2	5.3	5.3	5.4	5.3	5.3	5.2	5.4	5.4	5.3	5.4	5.4	5.5	5.6	5.7	6.0	6.2	6.4	6.5	6.4	7.0	6.8	6.4	6.5	6.3	6.2	6.2	6.1	6.0	6.3

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
1931	[illegible]
1932	[illegible]	[illegible]
1933	[illegible]	[illegible]	[illegible]
1934	[illegible]	[illegible]	[illegible]	[illegible]
1935	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1936	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1937	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1938	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1939	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1940	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1941	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1942	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1943	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1944	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1945	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1946	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1947	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1948	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1949	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1951	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1952	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1953	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1954	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1955	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1956	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1957	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1958	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1959	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1960	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1961	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1962	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1963	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1964–2006 (each row)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
1965	6.6
1966	(0.7)	(7.4)
1967	9.0	10.2	31.1
1968	16.0	19.3	35.4	39.8
1969	8.8	9.3	15.5	8.5	(15.9)
1970	5.3	5.0	8.4	1.7	(13.2)	(10.5)
1971	9.0	9.4	13.2	9.1	0.4	9.7	34.4
1972	8.9	9.2	12.3	8.9	2.3	9.1	20.5	8.1
1973	2.8	2.4	3.9	(0.1)	(6.6)	(4.1)	(1.9)	(16.2)	(35.0)
1974	(6.0)	(7.3)	(7.3)	(11.8)	(18.3)	(18.7)	(20.7)	(33.5)	(47.8)	(58.1)
1975	0.7	0.1	1.0	(2.3)	(7.2)	(5.6)	(4.6)	(12.4)	(18.4)	(8.6)	99.6
1976	(0.4)	(1.0)	(0.3)	(3.3)	(7.7)	(6.4)	(5.7)	(12.2)	(16.6)	(9.4)	33.2	(11.1)
1977	1.8	1.5	2.3	(0.2)	(3.9)	(2.3)	(1.0)	(5.9)	(8.5)	(0.4)	33.0	8.5	32.5
1978	1.7	1.4	2.1	(0.2)	(3.5)	(2.0)	(0.9)	(5.1)	(7.1)	(0.3)	23.9	5.7	15.2	0.2
1979	1.3	0.9	1.6	(0.6)	(3.6)	(2.3)	(1.3)	(5.1)	(6.8)	(1.1)	17.5	2.9	8.1	(2.4)	(4.9)
1980	2.2	1.9	2.6	0.7	(2.0)	(0.7)	0.4	(2.8)	(4.1)	1.4	17.4	5.6	10.3	3.7	5.5	17.1
1981	2.1	1.9	2.5	0.7	(1.8)	(0.5)	0.5	(2.4)	(3.5)	1.4	15.0	4.9	8.4	3.1	4.1	8.9	1.3
1982	3.2	3.0	3.6	2.0	(0.2)	1.1	2.1	(0.4)	(1.2)	3.5	15.8	7.2	10.6	6.6	8.3	13.1	11.1	21.9
1983	4.1	3.9	4.6	3.2	1.1	2.5	3.5	1.3	0.7	5.2	16.5	9.0	12.2	9.1	11.0	15.3	14.7	22.1	22.3
1984	5.1	5.0	5.7	4.4	2.5	3.9	5.0	3.0	2.6	6.9	17.4	10.7	13.8	11.3	13.3	17.4	17.4	23.3	24.0	25.8
1985	5.5	5.4	6.1	4.9	3.1	4.5	5.5	3.7	3.4	7.5	17.1	11.0	13.8	11.6	13.4	16.7	16.7	20.8	20.5	19.6
1986	6.2	6.2	6.9	5.8	4.1	5.4	6.5	4.9	4.7	8.6	17.5	12.0	14.6	12.8	14.5	17.6	17.7	21.2	21.0	20.6
1987	6.1	6.1	6.8	5.7	4.2	5.4	6.4	4.9	4.7	8.3	16.5	11.4	13.7	12.0	13.4	15.9	15.7	18.3	17.6	16.5
1988	6.1	6.0	6.7	5.7	4.2	5.4	6.3	4.9	4.7	8.0	15.6	10.9	12.9	11.3	12.4	14.6	14.2	16.2	15.3	13.9
1989	6.8	6.8	7.5	6.5	5.1	6.3	7.3	5.9	5.8	9.1	16.3	11.9	13.9	12.4	13.6	15.6	15.5	17.4	16.7	15.8
1990	5.7	5.7	6.3	5.3	4.0	5.0	5.9	4.6	4.4	7.3	13.8	9.6	11.3	9.8	10.6	12.2	11.7	12.9	11.8	10.4
1991	6.1	6.1	6.7	5.7	4.5	5.5	6.3	5.1	4.9	7.8	13.9	10.0	11.6	10.2	11.0	12.4	12.0	13.2	12.2	11.0
1992	6.5	6.5	7.0	6.2	5.0	6.0	6.8	5.6	5.5	8.2	14.1	10.4	11.9	10.6	11.4	12.8	12.4	13.5	12.7	11.7
1993	7.1	7.1	7.6	6.8	5.7	6.7	7.5	6.4	6.4	9.0	14.6	11.2	12.6	11.5	12.3	13.6	13.4	14.4	13.8	12.9
1994	6.5	6.5	7.0	6.2	5.1	6.0	6.8	5.7	5.6	8.1	13.3	10.0	11.3	10.2	10.8	12.0	11.6	12.5	11.7	10.8
1995	6.9	6.9	7.4	6.7	5.6	6.5	7.3	6.3	6.2	8.6	13.6	10.5	11.7	10.7	11.3	12.4	12.1	12.9	12.3	11.5
1996	7.1	7.1	7.6	6.9	5.9	6.8	7.5	6.5	6.5	8.8	13.6	10.6	11.8	10.8	11.4	12.5	12.2	12.9	12.3	11.6
1997	7.4	7.4	8.0	7.3	6.3	7.2	7.9	7.0	6.9	9.2	13.8	11.0	12.1	11.2	11.8	12.8	12.6	13.3	12.8	12.1
1998	7.5	7.5	8.0	7.4	6.4	7.3	8.0	7.1	7.1	9.2	13.7	10.9	12.1	11.2	11.8	12.7	12.5	13.2	12.6	12.0
1999	7.9	7.9	8.4	7.8	6.9	7.7	8.4	7.6	7.6	9.7	14.0	11.4	12.5	11.6	12.2	13.1	12.9	13.6	13.2	12.6
2000	7.4	7.4	7.9	7.3	6.4	7.2	7.8	7.0	7.0	9.0	13.0	10.5	11.5	10.7	11.2	12.0	11.8	12.3	11.8	11.2
2001	6.8	6.8	7.2	6.6	5.7	6.5	7.0	6.2	6.2	8.1	11.9	9.4	10.4	9.5	9.9	10.7	10.4	10.9	10.3	9.7
2002	5.8	5.8	6.2	5.5	4.7	5.3	5.9	5.1	5.0	6.7	10.3	8.0	8.8	7.9	8.2	8.8	8.5	8.8	8.2	7.5
2003	6.1	6.0	6.4	5.8	5.0	5.7	6.2	5.4	5.3	7.0	10.6	8.3	9.1	8.2	8.6	9.2	8.8	9.2	8.6	8.0
2004	6.1	6.1	6.5	5.9	5.1	5.8	6.3	5.5	5.4	7.1	10.5	8.3	9.0	8.3	8.6	9.2	8.8	9.2	8.6	8.0
2005	6.4	6.4	6.8	6.2	5.4	6.1	6.6	5.9	5.8	7.5	10.8	8.6	9.4	8.6	8.9	9.5	9.2	9.6	9.1	8.5
2006	6.5	6.5	6.9	6.4	5.6	6.2	6.8	6.1	6.0	7.6	10.8	8.7	9.4	8.7	9.0	9.6	9.3	9.6	9.2	8.6

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1985	13.7
1986	18.1	22.7
1987	13.5	13.4	4.8
1988	11.2	10.3	4.6	4.4
1989	13.9	14.0	11.2	14.6	25.8
1990	8.0	6.9	3.3	2.8	2.0	(17.4)
1991	9.1	8.3	5.6	5.9	6.4	(2.2)	15.7
1992	10.0	9.5	7.4	8.0	8.9	3.7	16.2	16.8
1993	11.6	11.3	9.8	10.7	11.9	8.7	19.1	20.9	25.1
1994	9.4	8.9	7.3	7.7	8.2	5.0	11.5	10.1	7.0	(8.6)
1995	10.2	9.9	8.6	9.1	9.7	7.3	13.0	12.3	10.9	4.4	19.2
1996	10.5	10.2	9.0	9.5	10.1	8.1	13.0	12.5	11.4	7.2	16.1	13.1
1997	11.1	10.9	9.9	10.4	11.1	9.4	13.9	13.6	13.0	10.1	17.1	16.1	19.3
1998	11.1	10.9	10.0	10.5	11.1	9.5	13.5	13.2	12.6	10.2	15.5	14.3	14.9	10.6
1999	11.8	11.6	10.8	11.3	12.0	10.7	14.4	14.2	13.8	12.0	16.7	16.1	17.1	16.0	21.7
2000	10.4	10.2	9.3	9.7	10.1	8.8	11.8	11.4	10.7	8.8	12.0	10.7	10.1	7.2	5.5	(8.6)
2001	8.8	8.5	7.6	7.8	8.1	6.7	9.2	8.6	7.7	5.7	7.9	6.2	4.8	1.5	(1.4)	(11.2)	(13.8)
2002	6.6	6.2	5.2	5.3	5.3	3.9	5.9	5.1	3.9	1.8	3.2	1.1	(0.8)	(4.3)	(7.8)	(15.9)	(19.3)	(24.5)
2003	7.1	6.8	5.9	6.0	6.1	4.8	6.7	6.0	5.1	3.2	4.6	3.0	1.6	(1.1)	(3.3)	(8.7)	(8.7)	(6.1)	16.9
2004	7.2	6.9	6.0	6.1	6.2	5.0	6.9	6.2	5.4	3.7	5.0	3.6	2.5	0.3	(1.4)	(5.4)	(4.6)	(1.4)	12.8	8.8
2005	7.7	7.4	6.7	6.8	6.9	5.9	7.6	7.1	6.4	4.9	6.2	5.0	4.2	2.4	1.3	(1.8)	(0.3)	3.4	14.8	13.7	18.9
2006	7.9	7.6	6.9	7.0	7.2	6.2	7.9	7.4	6.7	5.4	6.7	5.6	4.9	3.4	2.5	0.0	1.5	4.9	13.9	13.0	15.1	11.4

INVESTMENT FROM END YEAR

HOW TO USE TABLES OF TOTAL RETURNS

The dates along the top (and bottom) are those on which each portfolio starts; those down the side are the dates to which the annual rate of return is calculated. Thus the figure at the bottom right hand corner – 11.4 – shows that the real return on a portfolio bought at the end of December 2005 and held for one year to December 2006 was 11.4%. Figures in brackets indicate negative returns.

Each figure on the bottom line of the table shows the average annual return up to the end of December 2006 from the year shown below the figure. The first figure is 5.3, showing that the average annual rate of return over the whole period since 1899 has been 5.3%.

The top figure in each column is the rate of return in the first year, so that reading diagonally down the table gives the real rate of return in each year since 1899. The table can be used to see the rate of return over any period; thus a purchase made at the end of 1900 would have lost 3.5% of its value in one year (allowing for reinvestment of income) but, over the first five years (up to the end of 1905), would have given an average annual real return of 3.5%.

UK real capital value of equities

(annual average rates of return between year ends)

HOW TO USE TABLES OF TOTAL RETURNS

The dates along the top (and bottom) are those on which each portfolio starts; those down the side are the dates to which the annual rate of return is calculated. Thus the figure at the bottom right hand corner – 108 – shows that the real capital value of a portfolio bought at the end of December 2005 and held for one year to December 2006 was £108. Figures in brackets indicate negative returns.

Each figure on the bottom line of the table shows the real capital value of £100 up to the end of December 2006 from the year shown below the figure. The first figure is 213, showing that the accumulated capital value of £100 for the whole period since 1899 is £213.

The top figure in each column is the capital value in the first year, so that reading diagonally down the table gives the capital value in each year since 1899. The table can be used to see the cumulative capital growth over any period; thus a £100 investment made at the end of 1900 would have fallen to £92 in one year but, over the first five years (up to the end of 1905), would have climbed back up to £94, £6 below the original investment.

INVESTMENT FROM END YEAR (columns) / INVESTMENT TO END YEAR (rows)

To \ From	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932
1900	105
1901	97	92
1902	95	90	98
1903	92	88	95	97
1904	100	95	103	105	108
1905	99	94	102	104	107	99
1906	112	107	116	118	121	112	113
1907	97	92	100	102	105	97	98	87
1908	95	91	99	101	103	96	96	85	98
1909	101	97	105	107	110	102	103	91	104	106
1910	99	95	103	105	108	100	100	89	102	104	98
1911	94	89	97	99	102	94	95	84	97	98	92	94
1912	90	86	93	95	97	90	91	80	93	94	89	90	96
1913	83	79	86	88	90	84	84	75	86	87	82	84	89	93
1914	80	76	82	84	86	80	81	71	82	84	79	80	85	89	96
1915	64	61	67	68	70	65	65	58	66	68	64	65	69	72	77	81
1916	51	48	52	53	55	51	51	45	52	53	50	51	54	57	61	64	79
1917	44	42	45	46	47	44	44	39	45	46	43	44	47	49	52	55	68	86
1918	44	42	46	47	48	44	45	39	46	46	44	44	47	49	53	55	68	87	101
1919	46	44	48	49	50	47	47	42	48	49	46	47	50	52	56	58	72	92	106	105
1920	29	28	30	30	31	29	29	26	30	30	29	29	31	32	35	36	45	57	66	65	62
1921	36	35	38	38	39	36	37	32	37	38	36	37	39	40	44	46	56	72	83	82	78	126
1922	48	46	50	51	52	48	49	43	50	50	47	48	51	54	58	60	75	95	110	109	103	166	132
1923	47	45	49	49	51	47	47	42	48	49	46	47	50	52	56	59	73	93	107	106	101	162	129	98
1924	53	50	55	56	57	53	54	47	55	56	52	53	57	59	63	66	82	104	121	120	114	183	146	110	113
1925	59	57	62	63	65	60	60	53	61	62	59	60	64	66	71	75	92	117	136	135	128	206	164	124	127	112
1926	60	57	62	63	65	60	61	54	62	63	59	60	64	67	72	75	93	118	137	136	129	207	165	125	128	113	101
1927	66	63	68	70	72	66	67	59	68	69	65	66	70	74	79	83	102	130	151	150	142	228	182	137	141	125	111	110
1928	74	71	77	79	81	75	75	67	77	78	74	75	80	83	89	93	116	147	170	169	160	258	205	155	159	141	125	124	113
1929	61	58	63	64	66	61	61	54	63	64	60	61	65	68	73	76	94	120	139	137	130	210	167	126	129	115	102	101	92	81
1930	59	57	61	63	64	60	60	53	61	62	59	60	63	66	71	74	92	117	136	134	128	205	163	123	126	112	100	99	90	80	98
1931	47	45	49	50	51	47	48	42	48	49	46	47	50	52	56	59	73	93	108	106	101	163	130	98	100	89	79	78	71	63	78	79
1932	62	59	64	66	67	63	63	56	64	65	61	63	66	69	75	78	97	123	142	141	134	215	172	129	133	118	105	104	94	84	103	105	132
1933	75	72	78	79	81	75	76	67	77	79	74	76	80	84	90	94	116	148	172	170	161	260	207	156	160	142	126	125	114	101	124	127	160	121
1934	82	78	85	86	89	82	83	73	84	86	81	82	87	91	98	103	127	161	187	185	176	283	225	170	174	155	137	137	124	110	135	138	174	131
1935	88	84	91	93	96	88	89	79	91	92	87	89	94	98	106	110	137	174	201	200	189	305	243	183	188	166	148	147	133	118	145	148	187	142
1936	99	94	102	104	107	99	100	88	102	104	97	99	105	110	118	124	153	195	226	224	212	341	272	205	210	186	166	165	150	133	163	166	210	159
1937	78	74	80	82	84	78	79	69	80	81	77	78	83	87	93	97	120	153	178	176	167	269	214	161	165	147	130	130	118	104	128	131	165	125
1938	68	65	70	71	73	68	69	61	70	71	67	68	72	76	81	85	105	134	155	154	146	234	187	141	144	128	114	113	103	91	112	114	144	109
1939	59	56	61	62	64	59	60	53	61	62	58	60	63	66	71	74	92	117	135	134	127	205	163	123	126	112	100	99	90	80	98	100	126	95
1940	47	45	49	50	51	47	48	42	49	50	47	48	50	53	57	59	73	93	108	107	102	163	130	98	101	89	79	79	71	63	78	80	100	76
1941	53	51	55	56	58	54	54	48	55	56	53	54	57	60	64	67	83	105	122	121	115	185	147	111	114	101	90	89	81	72	88	90	114	86
1942	61	58	63	64	66	61	61	54	63	64	60	61	65	68	73	76	94	120	139	137	130	210	167	126	129	115	102	101	92	81	100	102	129	97
1943	65	62	68	69	71	66	66	58	67	68	64	66	70	73	78	82	101	129	149	148	140	226	180	136	139	123	110	109	99	88	108	110	139	105
1944	70	67	72	74	76	70	71	63	72	73	69	71	75	78	84	88	109	138	160	159	151	242	193	146	149	132	118	117	106	94	116	118	149	113
1945	71	67	73	75	77	71	72	63	73	74	70	71	76	79	85	89	110	139	162	160	152	245	195	147	151	134	119	118	107	95	117	119	150	114
1946	80	76	83	84	87	80	81	72	83	84	79	81	86	89	96	101	124	158	183	182	172	277	221	167	171	151	135	134	121	108	132	135	170	129
1947	73	69	75	77	79	73	74	65	75	76	72	73	78	81	87	91	113	144	166	165	157	252	201	151	155	137	122	121	110	98	120	123	155	117
1948	64	61	66	67	69	64	65	57	66	67	63	64	68	71	77	80	99	126	146	145	138	221	176	133	136	121	108	107	97	86	106	108	136	103
1949	55	53	57	59	60	56	56	50	57	58	55	56	59	62	67	70	86	109	127	126	119	192	153	115	118	105	93	93	84	74	92	94	118	89
1950	57	54	59	60	62	57	57	51	59	60	56	57	61	63	68	71	88	112	130	129	122	196	156	118	121	107	95	95	86	76	94	96	121	91
1951	52	50	54	55	57	52	53	47	54	55	51	53	56	58	63	65	81	103	119	118	112	181	144	109	111	99	88	87	79	70	86	88	111	84
1952	46	44	48	49	50	46	47	41	48	48	46	47	49	51	55	58	72	91	106	105	99	160	127	96	98	87	78	77	70	62	76	78	98	74
1953	54	51	56	57	58	54	54	48	56	57	53	54	58	60	65	68	84	106	123	122	116	186	148	112	115	102	91	90	82	72	89	91	115	87
1954	74	70	76	78	80	74	75	66	76	77	73	74	79	82	88	93	114	145	169	167	159	255	203	153	157	139	124	123	112	99	122	124	157	118
1955	74	70	76	78	80	74	75	66	76	77	73	74	79	82	88	93	114	145	169	167	159	255	203	153	157	139	124	123	112	99	122	124	157	118
1956	62	59	64	65	67	62	62	55	63	65	61	62	66	69	74	77	95	121	141	140	132	213	170	128	131	116	103	103	93	83	102	104	131	99
1957	55	52	57	58	59	55	55	49	56	57	54	55	58	61	66	69	85	108	125	124	118	189	151	114	117	103	92	91	83	73	90	92	116	88
1958	76	72	78	80	82	76	77	68	78	80	75	76	81	85	91	95	118	150	173	172	163	262	209	158	162	143	127	127	115	102	125	128	161	122
1959	113	108	117	120	123	114	115	101	117	119	112	114	121	126	136	142	176	224	259	257	244	392	312	236	242	214	190	189	172	152	187	191	241	182
1960	108	103	112	114	118	109	110	97	112	114	107	109	116	121	130	136	168	214	248	246	233	375	299	226	231	205	182	181	164	146	179	183	231	174
1961	101	96	104	106	109	101	102	90	104	106	99	102	108	112	121	126	156	199	231	228	217	349	278	210	215	190	169	168	153	135	166	170	214	162
1962	94	89	97	99	102	94	95	84	97	98	93	95	100	105	113	118	146	185	215	213	202	325	259	195	200	177	158	157	142	126	155	158	200	151
1963	106	101	110	112	115	107	107	95	109	111	105	107	113	118	127	133	165	209	243	240	228	367	292	221	226	201	178	177	161	142	175	179	226	171
1964	91	87	94	96	99	91	92	81	94	96	90	92	97	102	109	114	141	180	208	206	196	315	251	190	194	172	153	152	138	122	150	154	194	146
1965	92	88	96	97	100	93	93	82	95	97	91	93	99	103	111	116	143	182	211	209	199	319	254	192	197	174	155	154	140	124	152	156	196	148
1966	81	77	84	85	88	81	82	72	83	85	80	81	86	90	97	101	125	159	185	183	174	279	223	168	172	153	136	135	122	108	133	136	172	130
1967	101	97	105	107	110	102	103	91	105	106	100	102	108	113	122	127	157	200	232	230	218	351	280	211	216	192	171	169	154	136	167	171	216	163
1968	137	131	142	145	149	138	139	123	142	144	136	138	147	153	165	172	213	271	314	311	296	475	379	286	293	260	231	229	208	184	227	232	292	221
1969	111	106	115	117	121	112	113	99	115	117	110	112	119	124	134	140	173	220	255	252	240	385	307	232	237	210	187	186	169	149	184	188	237	179
1970	95	91	99	101	103	96	97	85	98	100	94	96	102	106	114	120	148	188	218	216	205	330	263	199	203	180	160	159	145	128	157	161	203	153
1971	124	118	129	131	135	125	126	111	128	130	123	125	133	138	149	156	193	245	284	281	267	430	342	258	265	235	209	207	188	167	205	209	264	200
1972	130	124	135	137	141	131	132	116	134	137	128	131	139	145	156	163	202	257	298	295	280	450	359	271	277	246	219	217	197	175	215	219	277	209
1973	81	77	84	85	88	81	82	72	83	85	80	81	86	90	97	101	125	159	185	183	174	280	223	168	172	153	136	135	122	108	133	136	172	130
1974	30	29	31	32	33	30	31	27	31	32	30	31	32	34	36	38	47	60	69	69	65	105	83	63	65	57	51	51	46	41	50	51	64	49
1975	57	55	59	60	62	58	58	51	59	60	57	58	61	64	69	72	89	113	131	130	123	198	158	119	122	108	96	96	87	77	95	97	122	92
1976	48	46	50	51	52	48	48	43	49	50	47	48	51	53	57	60	74	94	110	109	103	166	132	100	102	90	80	80	73	64	79	81	102	77
1977	60	57	62	64	65	61	61	54	62	63	60	61	64	67	72	76	94	119	138	137	130	209	166	125	128	114	101	101	91	81	99	102	128	97
1978	57	54	59	60	62	57	58	51	59	60	56	58	61	64	68	72	89	113	131	129	123	198	157	119	122	108	96	95	87	77	94	96	121	92
1979	51	48	53	54	55	51	51	45	52	53	50	51	54	57	61	64	79	100	116	115	109	176	140	106	108	96	85	85	77	68	84	86	108	82
1980	56	53	58	59	61	56	57	50	58	59	55	57	60	63	67	70	87	111	128	127	121	194	155	117	120	106	94	94	85	75	93	95	119	90
1981	54	51	56	57	58	54	54	48	55	56	53	54	57	60	64	67	83	106	123	122	116	186	148	112	114	101	90	90	81	72	89	91	114	86
1982	62	59	64	66	67	62	63	56	64	65	61	63	66	69	75	78	96	123	142	141	134	215	171	129	133	117	104	104	94	83	103	105	132	100
1983	73	69	75	77	79	73	74	65	75	76	72	73	78	81	87	91	113	143	166	165	156	251	200	151	155	137	122	121	110	98	120	123	155	117
1984	88	83	91	92	95	88	89	78	90	92	86	88	94	98	105	110	136	173	200	198	188	303	241	182	187	165	147	146	133	118	144	148	186	141
1985	95	91	99	101	103	96	97	85	98	100	94	96	102	106	114	120	148	188	218	216	205	330	263	199	203	180	160	159	145	128	157	161	203	153
1986	112	107	116	119	122	113	114	101	116	118	111	113	120	125	135	141	175	222	257	255	242	389	310	234	240	213	189	188	171	151	186	190	239	181
1987	113	108	117	119	123	114	114	101	117	119	112	114	121	126	136	142	175	223	259	256	243	391	312	235	241	214	190	189	171	152	187	191	241	182
1988	113	107	117	119	122	113	114	101	116	118	111	114	120	126	135	141	175	222	258	255	243	390	311	235	240	213	189	188	171	151	186	190	240	181
1989	136	130	141	144	148	137	138	122	140	143	134	137	145	152	163	171	211	268	311	308	293	471	375	283	290	257	229	227	206	183	225	229	290	219
1990	107	102	110	112	116	107	108	95	110	112	105	107	114	119	128	134	165	210	244	242	229	369	294	222	227	202	179	178	162	143	176	180	227	171
1991	117	112	122	124	127	118	119	105	121	123	116	118	125	131	141	147	182	232	269	266	253	406	324	244	250	222	197	196	178	158	194	198	250	189
1992	131	125	136	139	143	132	133	118	136	138	130	132	140	147	158	165	204	259	301	298	283	455	362	274	280	248	221	219	199	177	217	222	280	211
1993	159	152	165	168	173	160	161	142	164	167	157	160	170	177	191	200	247	314	364	361	342	551	439	331	339	301	268	266	241	214	263	268	339	256
1994	140	133	145	148	152	141	142	125	144	147	138	141	149	156	168	176	217	276	320	317	301	484	386	291	298	264	235	234	212	188	231	236	298	225
1995	161	153	166	169	174	161	163	144	166	169	159	162	172	179	193	202	249	317	367	364	346	556	443	334	342	304	270	268	243	216	265	271	342	258
1996	175	167	181	185	190	176	177	156	181	184	173	176	187	195	210	220	272	345	401	397	377	606	483	364	373	331	294	292	265	235	289	295	373	281
1997	202	193	209	213	219	203	205	181	209	212	200	204	216	226	243	254	314	399	463	458	435	700	558	421	431	382	340	338	307	272	334	341	430	325
1998	218	208	226	230	237	219	221	195	225	229	216	220	233	243	262	274	339	431	500	495	470	755	602	454	465	413	367	364	331	293	360	368	465	351
1999	260	248	269	274	282	261	263	233	268	273	257	262	278	290	312	326	404	513	595	590	560	900	717	541	555	492	437	434	394	349	429	439	554	418
2000	233	222	241	245	252	234	235	208	240	244	230	234	248	259	279	292	361	459	532	527	501	805	641	484	496	440	391	388	353	312	384	392	495	374
2001	195	186	202	206	212	196	198	175	202	205	193	197	209	218	234	245	303	386	447	443	420	676	539	407	417	369	328	326	296	262	322	329	416	314
2002	142	136	147	150	154	143	144	127	147	149	141	144	152	159	171	179	221	281	326	323	306	493	393	296	304	269	239	238	216	191	235	240	303	229
2003	161	154	167	170	175	162	163	144	167	169	159	163	173	180	194	203	250	319	369	366	347	559	445	336	344	305	271	270	245	217	266	272	344	260
2004	170	162	176	180	185	171	172	152	176	179	168	172	182	190	204	214	264	336	390	386	367	590	470	355	363	322	286	284	258	229	281	287	363	274
2005	197	188	204	208	214	198	199	176	203	207	194	198	210	220	236	247	305	388	450	446	424	681	543	410	420	372	331	329	298	264	325	332	419	316
2006	213	203	221	225	231	214	216	191	220	224	211	215	228	238	256	268	331	421	488	483	459	738	588	444	455	403	359	356	323	286	352	360	454	343

To \ From	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1934	109
1935	117	108
1936	132	121	112
1937	103	95	88	79
1938	90	83	77	69	87
1939	79	72	67	60	76	87
1940	63	58	54	48	61	70	80
1941	71	65	61	54	69	79	90	113
1942	81	74	69	61	78	89	102	129	113
1943	87	80	74	66	84	96	110	138	122	108
1944	93	86	80	71	90	103	118	148	131	115	107
1945	94	86	80	72	91	104	119	150	132	117	108	101
1946	107	98	91	81	103	118	135	170	150	132	123	114	113
1947	97	89	83	74	94	107	123	154	136	120	111	104	103	91
1948	85	78	73	65	82	94	108	136	120	106	98	91	90	80	88
1949	74	68	63	56	71	82	94	118	104	92	85	79	78	69	76	87
1950	76	69	64	58	73	84	96	120	106	94	87	81	80	71	78	89	102
1951	70	64	59	53	67	77	88	111	98	86	80	75	74	65	72	82	94	92
1952	62	56	52	47	59	68	78	98	86	76	71	66	65	58	63	72	83	81	89
1953	72	66	61	55	69	79	91	114	101	89	83	77	76	67	74	84	97	95	103	117
1954	98	90	84	75	95	109	125	156	138	122	113	105	104	92	101	115	133	130	141	160	137
1955	98	90	84	75	95	109	124	156	138	122	113	105	104	92	101	115	133	130	141	160	137	100
1956	82	75	70	62	79	91	104	131	115	102	94	88	87	77	85	96	111	108	118	133	114	84	84
1957	73	67	62	55	71	81	92	116	102	90	84	78	77	68	75	86	99	96	105	119	102	74	74	89
1958	101	93	86	77	98	112	128	161	142	125	116	108	107	95	104	119	137	134	145	164	141	103	103	123	139
1959	151	139	129	115	146	167	191	240	212	187	174	162	160	141	156	177	204	200	217	245	210	154	154	184	207	149
1960	144	132	123	110	140	160	183	230	203	179	166	155	153	135	149	169	195	191	208	235	201	147	147	176	198	143	96
1961	134	123	114	102	130	149	170	214	189	166	154	144	143	126	139	158	182	178	193	218	187	137	137	164	184	133	89	93
1962	125	115	107	95	121	138	158	199	176	155	144	134	133	117	129	147	169	165	180	203	174	127	127	152	171	124	83	87	93
1963	141	130	120	108	137	157	179	225	199	175	163	152	150	132	146	166	191	187	203	230	197	144	144	172	194	140	94	98	105	113
1964	121	111	103	92	117	134	154	193	170	150	140	130	129	114	125	142	164	160	175	197	169	124	124	148	166	120	80	84	90	97	86
1965	123	113	105	94	119	136	156	196	173	152	141	132	131	115	127	144	166	163	177	200	171	125	125	150	169	122	81	85	92	98	87	101
1966	108	99	92	82	104	119	136	171	151	133	124	115	114	101	111	126	146	142	155	175	150	110	110	131	148	107	71	75	80	86	76	89	88
1967	135	124	115	103	131	150	171	215	190	167	155	145	143	127	139	159	183	179	194	220	188	138	138	165	185	134	90	94	101	108	96	111	110	126
1968	183	168	156	139	177	203	232	291	257	227	210	196	194	172	189	215	248	242	263	298	255	186	186	223	251	181	121	127	136	146	129	151	149	170
1969	148	136	126	113	143	164	188	236	208	184	171	159	157	139	153	174	201	196	213	241	207	151	151	181	203	147	98	103	110	119	105	122	121	138
1970	127	117	108	97	123	141	161	202	179	157	146	136	135	119	131	149	172	168	183	207	177	129	129	155	174	126	84	88	95	102	90	105	103	118
1971	166	152	141	126	160	183	210	263	232	205	190	177	176	155	171	194	224	219	238	269	231	168	168	202	227	164	110	115	123	132	117	136	135	154
1972	173	159	148	132	168	192	220	276	244	215	199	186	184	162	179	203	235	229	249	282	242	177	177	211	238	172	115	120	129	139	123	143	141	161
1973	108	99	92	82	104	119	136	171	151	133	124	115	114	101	111	126	146	142	155	175	150	110	110	131	148	107	71	75	80	86	76	89	88	100
1974	40	37	34	31	39	45	51	64	57	50	46	43	43	38	42	47	55	53	58	66	56	41	41	49	55	40	27	28	30	32	29	33	33	38
1975	76	70	65	58	74	85	97	122	107	95	88	82	81	72	79	90	103	101	110	124	106	78	78	93	105	76	51	53	57	61	54	63	62	71
1976	64	59	54	49	62	71	81	102	90	79	73	68	68	60	66	75	86	84	92	104	89	65	65	78	87	63	42	44	48	51	45	53	52	59
1977	80	74	68	61	78	89	102	128	113	99	92	86	85	75	83	94	109	106	116	131	112	82	82	98	110	80	53	56	60	64	57	66	65	75
1978	76	70	65	58	74	84	96	121	107	94	87	82	81	71	78	89	103	101	109	124	106	77	77	93	104	75	50	53	57	61	54	63	62	71
1979	68	62	58	51	65	75	86	108	95	84	78	73	72	63	70	79	92	90	97	110	94	69	69	83	93	67	45	47	50	54	48	56	55	63
1980	75	69	64	57	72	83	95	119	105	93	86	80	79	70	77	88	101	99	108	121	104	76	76	91	102	74	49	52	56	60	53	62	61	69
1981	72	66	61	54	69	79	91	114	100	89	82	77	76	67	74	84	97	95	103	116	100	73	73	87	98	71	47	50	53	57	51	59	58	66
1982	83	76	71	63	80	92	105	132	116	103	95	89	88	78	85	97	112	110	119	135	115	84	84	101	114	82	55	57	62	66	59	68	67	77
1983	97	89	83	74	94	107	123	154	136	120	111	104	103	91	100	114	131	128	139	157	135	99	99	118	133	96	64	67	72	77	68	80	79	90
1984	117	107	99	89	113	129	148	186	164	144	134	125	124	109	120	137	158	154	168	190	163	119	119	142	160	115	77	81	87	93	83	96	95	108
1985	127	117	108	97	123	141	161	202	179	157	146	136	135	119	131	149	172	168	183	207	177	129	129	155	174	126	84	88	95	102	90	105	103	118
1986	150	138	128	114	145	166	190	239	211	186	172	161	159	141	155	176	203	198	216	244	209	153	153	183	206	148	99	104	112	120	106	124	122	139
1987	151	138	128	115	146	167	191	240	212	186	173	161	160	141	155	177	204	199	217	245	210	153	153	184	207	149	100	104	112	120	107	124	123	140
1988	150	138	128	114	145	166	190	239	211	186	173	161	159	141	155	176	203	199	216	244	209	153	153	183	206	149	99	104	112	120	106	124	122	140
1989	181	166	155	138	175	201	230	288	255	224	208	194	193	170	187	213	245	240	261	295	253	185	185	221	249	179	120	126	135	145	128	149	147	168
1990	142	130	121	108	137	157	180	226	200	176	163	152	151	133	147	167	192	188	204	231	198	145	145	173	195	141	94	98	106	114	100	117	116	132
1991	157	144	133	119	151	173	198	249	220	194	180	168	166	147	161	184	212	207	225	254	218	159	159	191	215	155	104	108	117	125	111	129	127	145
1992	175	161	149	133	169	194	222	279	246	217	201	188	186	164	181	206	237	232	252	285	244	178	178	214	240	173	116	121	130	140	124	144	142	163
1993	212	195	181	161	205	235	269	337	298	263	244	227	225	199	219	249	287	280	305	345	296	216	216	259	291	210	140	147	158	170	150	175	172	197
1994	186	171	159	142	180	206	236	297	262	231	214	200	198	175	192	219	252	246	268	303	260	190	190	227	256	185	123	129	139	149	132	154	152	173
1995	214	196	182	163	207	237	271	340	301	265	246	229	227	201	221	251	290	283	308	348	298	218	218	261	293	212	142	148	159	171	151	176	174	199
1996	233	214	199	177	226	258	296	371	328	289	268	250	248	219	241	274	316	308	336	379	325	237	237	284	320	231	154	162	174	187	165	192	190	217
1997	270	247	230	205	261	299	342	429	378	334	310	289	286	253	278	316	365	356	388	438	376	274	274	329	370	267	179	187	201	216	191	222	219	250
1998	291	267	248	221	281	322	369	463	409	360	335	312	309	273	300	341	394	385	419	473	405	296	296	355	399	288	193	201	217	233	206	240	237	270
1999	347	318	295	264	335	384	439	551	487	429	399	372	368	325	358	407	469	458	499	563	483	353	353	423	475	343	230	240	258	277	245	286	282	322
2000	310	284	264	236	300	343	393	493	435	384	356	332	329	290	320	364	419	410	446	504	432	316	316	378	425	307	205	215	231	248	219	255	252	288
2001	260	239	222	198	252	288	330	414	366	322	299	279	276	244	269	305	352	344	375	423	363	265	265	317	357	258	172	180	194	208	184	215	212	242
2002	190	174	162	144	184	210	241	302	266	235	218	203	201	178	196	223	257	251	273	308	264	193	193	231	260	188	126	131	141	152	134	156	154	176
2003	215	197	183	164	208	238	273	342	302	266	247	231	228	202	222	252	291	284	310	350	300	219	219	262	295	213	143	149	160	172	152	177	175	200
2004	227	208	194	173	220	252	288	361	319	281	261	243	241	213	234	266	307	300	327	369	316	231	231	277	311	225	150	157	169	182	161	187	185	211
2005	262	241	224	200	254	291	333	417	368	325	302	281	279	246	271	308	355	347	377	426	366	267	267	320	360	260	174	182	195	210	186	216	213	244
2006	284	261	242	216	275	315	360	452	399	352	327	305	302	266	293	333	385	376	409	462	396	289	289	347	390	281	188	197	212	227	201	234	231	264

To \ From	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1968	135
1969	110	81
1970	94	69	86
1971	122	90	112	130
1972	128	95	117	136	105
1973	80	59	73	85	65	62
1974	30	22	27	32	24	23	37
1975	57	42	51	60	46	44	71	189
1976	47	35	43	50	39	37	59	158	84
1977	59	44	54	63	49	46	75	199	105	126
1978	56	42	51	60	46	44	71	188	100	119	95
1979	50	37	46	53	41	39	63	168	89	106	84	89
1980	55	41	50	59	45	43	69	185	98	117	93	98	110
1981	53	39	48	56	43	41	66	177	94	112	89	94	106	96
1982	61	45	56	65	50	48	77	205	108	130	103	109	122	111	116
1983	72	53	65	76	59	56	90	240	127	152	121	127	143	130	135	117
1984	86	64	79	92	70	67	108	289	153	183	145	153	172	156	163	141	121
1985	94	69	86	100	77	73	118	315	166	199	158	167	188	170	178	153	131	109
1986	111	82	101	118	91	86	139	372	196	235	187	197	221	201	210	181	155	129	118
1987	111	82	102	118	91	87	140	373	197	236	188	198	222	202	211	182	156	129	118	100
1988	111	82	101	118	91	87	140	372	197	235	187	197	222	201	210	181	155	129	118	100	100
1989	134	99	122	143	110	105	168	449	237	284	226	238	268	243	254	219	187	155	143	121	120	121
1990	105	78	96	112	86	82	132	352	186	223	177	187	210	190	199	172	147	122	112	95	94	95	78
1991	116	85	106	123	95	90	145	388	205	245	195	206	231	209	219	189	162	134	123	104	104	104	86	110
1992	130	96	118	138	106	101	163	434	229	275	218	230	259	234	245	211	181	150	138	117	116	117	97	123	112
1993	157	116	143	167	128	122	197	525	278	332	264	279	313	284	296	256	219	182	167	141	141	141	117	149	135	121
1994	138	102	126	147	113	107	173	462	244	292	232	245	275	249	261	225	193	160	147	124	124	124	103	131	119	106	88
1995	158	117	144	168	129	123	199	530	280	335	266	281	316	286	299	258	221	183	168	143	142	142	118	151	137	122	101	115
1996	173	127	157	183	141	135	217	578	305	366	290	307	345	312	326	282	241	200	183	156	155	155	129	164	149	133	110	125	109
1997	199	147	182	212	163	155	250	668	353	422	336	354	398	361	377	325	278	231	212	180	179	179	149	190	172	154	127	145	126	116
1998	215	159	196	229	176	168	270	721	381	456	362	382	430	389	407	351	301	249	229	194	193	194	160	205	186	166	137	156	136	125	108
1999	256	189	234	273	209	200	322	859	454	543	432	456	512	464	485	418	358	297	273	231	230	231	191	244	221	198	163	186	162	149	129	119
2000	229	169	209	244	187	179	288	768	406	486	386	407	458	415	433	374	320	266	244	207	206	206	171	218	198	177	146	166	145	133	115	107	89
2001	193	142	176	205	157	150	242	645	341	408	324	342	385	348	364	314	269	223	205	174	173	173	144	183	166	149	123	140	122	112	97	89	75	84
2002	140	104	128	149	115	109	176	470	248	297	236	249	280	254	265	229	196	163	149	127	126	126	105	134	121	108	89	102	89	81	70	65	55	61	73
2003	159	118	145	169	130	124	200	533	282	337	268	283	318	288	301	260	222	184	169	143	143	143	119	151	137	123	101	115	101	92	80	74	62	69	83	113
2004	168	124	153	179	137	131	211	563	297	356	283	299	335	304	317	274	235	195	179	151	151	151	125	160	145	130	107	122	106	97	84	78	66	73	87	120	106
2005	194	143	177	206	159	151	244	650	344	411	327	345	388	351	367	317	271	225	206	175	174	175	145	185	168	150	124	141	123	112	97	90	76	85	101	138	122	116
2006	210	155	192	224	172	164	264	704	372	446	354	374	420	380	397	343	294	244	224	190	189	189	157	200	182	162	134	153	133	122	105	98	82	92	109	150	132	125	108

UK real return on gilts – gross income re-invested

(annual average rates of return between year ends)

INVESTMENT FROM END YEAR

INVESTMENT TO END YEAR

	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1900	(2.1)
1901	(1.6)	(1.0)
1902	(1.5)	(1.1)	(1.2)
1903	(1.9)	(1.8)	(2.2)	(3.1)
1904	(0.7)	(0.4)	(0.1)	0.4	4.0
1905	(0.0)	0.4	0.8	1.4	3.8	3.6
1906	0.8	1.3	1.7	2.5	4.4	4.6	5.6
1907	(0.5)	(0.3)	(0.2)	0.0	0.8	(0.2)	(2.0)	(9.1)
1908	(0.4)	(0.2)	(0.1)	0.1	0.8	(0.0)	(1.2)	(4.4)	0.5
1909	(0.2)	0.0	0.1	0.3	0.9	0.3	(0.5)	(2.4)	1.1	1.7
1910	(0.3)	(0.1)	(0.0)	0.1	0.6	0.0	(0.6)	(2.1)	0.3	0.2	(1.3)
1911	(0.5)	(0.3)	(0.3)	(0.2)	0.2	(0.3)	(1.0)	(2.2)	(0.4)	(0.7)	(1.9)	(2.6)
1912	(0.6)	(0.5)	(0.4)	(0.4)	(0.0)	(0.5)	(1.1)	(2.2)	(0.7)	(1.1)	(2.0)	(2.3)	(2.0)
1913	(0.7)	(0.6)	(0.5)	(0.4)	(0.2)	(0.6)	(1.1)	(2.1)	(0.8)	(1.1)	(1.8)	(2.0)	(1.7)	(1.4)
1914	(0.3)	(0.2)	(0.1)	(0.0)	0.2	(0.1)	(0.5)	(1.3)	(0.1)	(0.2)	(0.6)	(0.4)	0.3	1.5	4.5
1915	(1.4)	(1.4)	(1.4)	(1.4)	(1.3)	(1.7)	(2.2)	(3.1)	(2.3)	(2.7)	(3.4)	(3.8)	(4.1)	(4.8)	(6.5)	(16.3)
1916	(3.6)	(3.7)	(3.9)	(4.1)	(4.1)	(4.8)	(5.5)	(6.6)	(6.3)	(7.1)	(8.3)	(9.4)	(10.7)	(12.8)	(16.3)	(25.0)	(32.8)
1917	(4.3)	(4.4)	(4.6)	(4.8)	(4.9)	(5.6)	(6.3)	(7.3)	(7.2)	(8.0)	(9.1)	(10.2)	(11.4)	(13.1)	(15.9)	(21.7)	(24.3)	(14.7)
1918	(4.1)	(4.3)	(4.4)	(4.6)	(4.7)	(5.3)	(6.0)	(6.9)	(6.7)	(7.4)	(8.3)	(9.2)	(10.1)	(11.4)	(13.3)	(17.2)	(17.5)	(8.6)	(2.0)
1919	(4.5)	(4.6)	(4.8)	(5.0)	(5.1)	(5.7)	(6.3)	(7.2)	(7.0)	(7.7)	(8.6)	(9.3)	(10.2)	(11.3)	(12.8)	(15.9)	(15.8)	(9.2)	(6.4)	(10.5)
1920	(5.4)	(5.6)	(5.8)	(6.1)	(6.2)	(6.8)	(7.5)	(8.4)	(8.3)	(9.0)	(9.9)	(10.8)	(11.6)	(12.7)	(14.3)	(17.0)	(17.2)	(12.7)	(12.1)	(16.7)	(22.5)
1921	(3.2)	(3.3)	(3.4)	(3.5)	(3.5)	(3.9)	(4.4)	(5.0)	(4.7)	(5.1)	(5.6)	(6.0)	(6.4)	(6.8)	(7.5)	(9.1)	(7.8)	(1.8)	1.7	3.0	10.5	57.5
1922	(2.0)	(2.0)	(2.1)	(2.1)	(2.0)	(2.4)	(2.7)	(3.2)	(2.8)	(3.0)	(3.4)	(3.6)	(3.7)	(3.8)	(4.1)	(5.1)	(3.4)	2.6	6.5	8.7	16.1	42.0	28.0
1923	(1.7)	(1.7)	(1.7)	(1.7)	(1.7)	(2.0)	(2.2)	(2.7)	(2.3)	(2.5)	(2.7)	(2.9)	(2.9)	(3.0)	(3.1)	(3.9)	(2.3)	3.1	6.4	8.2	13.5	28.8	16.5	6.0
1924	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.6)	(1.9)	(2.3)	(1.9)	(2.0)	(2.3)	(2.4)	(2.3)	(2.3)	(2.3)	(2.4)	(3.1)	(1.5)	3.3	6.2	7.6	11.7	22.4	12.5	5.5	4.9
1925	(1.3)	(1.3)	(1.3)	(1.3)	(1.2)	(1.4)	(1.7)	(2.0)	(1.6)	(1.7)	(2.0)	(2.0)	(2.0)	(2.0)	(2.0)	(2.6)	(1.1)	3.3	5.8	6.9	10.1	18.2	10.0	4.5	3.8	2.7
1926	(1.2)	(1.1)	(1.1)	(1.1)	(1.1)	(1.3)	(1.5)	(1.8)	(1.4)	(1.6)	(1.7)	(1.8)	(1.7)	(1.7)	(1.7)	(2.2)	(0.8)	3.1	5.3	6.3	8.9	15.3	8.3	3.8	3.1	2.2	1.8
1927	(0.7)	(0.6)	(0.6)	(0.6)	(0.5)	(0.7)	(0.9)	(1.2)	(0.7)	(0.8)	(0.9)	(0.9)	(0.8)	(0.7)	(0.7)	(1.1)	0.3	4.0	6.1	7.1	9.5	15.0	9.1	5.7	5.6	5.9	7.5	13.6
1928	(0.4)	(0.4)	(0.4)	(0.3)	(0.2)	(0.4)	(0.6)	(0.8)	(0.4)	(0.5)	(0.6)	(0.5)	(0.4)	(0.3)	(0.2)	(0.6)	0.8	4.2	6.1	7.0	9.1	13.9	8.7	5.8	5.8	6.0	7.1	9.9	6.4
1929	(0.5)	(0.4)	(0.4)	(0.4)	(0.2)	(0.4)	(0.6)	(0.8)	(0.4)	(0.5)	(0.6)	(0.6)	(0.4)	(0.4)	(0.3)	(0.6)	0.6	3.8	5.5	6.2	8.1	12.1	7.5	4.8	4.6	4.6	5.0	6.2	2.6	(1.0)
1930	0.2	0.3	0.3	0.4	0.5	0.4	0.2	0.0	0.4	0.4	0.4	0.5	0.6	0.8	0.9	0.7	1.9	5.0	6.7	7.5	9.3	13.1	9.0	6.8	6.9	7.3	8.2	9.9	8.7	9.9	21.9
1931	0.3	0.4	0.4	0.5	0.6	0.5	0.4	0.2	0.6	0.6	0.5	0.6	0.8	1.0	1.1	0.9	2.1	5.0	6.5	7.2	8.8	12.2	8.5	6.5	6.6	6.8	7.5	8.7	7.6	8.0	12.7	4.3
1932	1.4	1.6	1.6	1.7	1.9	1.8	1.8	1.6	2.1	2.1	2.2	2.3	2.6	2.8	3.0	2.9	4.2	7.1	8.7	9.5	11.3	14.7	11.4	9.9	10.3	11.0	12.2	14.1	14.2	16.2	22.6	23.0	45.0
1933	1.5	1.6	1.7	1.8	2.0	1.9	1.8	1.7	2.1	2.2	2.2	2.4	2.6	2.8	3.0	3.0	4.1	6.9	8.4	9.1	10.7	13.7	10.7	9.2	9.6	10.1	11.1	12.5	12.3	13.5	17.4	16.0	22.3	3.2
1934	2.1	2.3	2.4	2.5	2.7	2.6	2.6	2.5	2.9	3.0	3.1	3.3	3.5	3.8	4.1	4.0	5.2	7.9	9.4	10.1	11.7	14.6	11.9	10.6	11.0	11.7	12.7	14.2	14.3	15.6	19.3	18.6	23.8	14.4	26.9
1935	1.9	2.1	2.1	2.2	2.4	2.4	2.3	2.2	2.6	2.7	2.8	2.9	3.2	3.4	3.6	3.6	4.7	7.2	8.5	9.2	10.6	13.2	10.6	9.3	9.6	10.0	10.8	11.9	11.6	12.4	14.8	13.4	15.9	7.5	9.7	(5.1)
1936	1.8	1.9	2.0	2.1	2.3	2.2	2.2	2.1	2.5	2.5	2.6	2.7	2.9	3.2	3.4	3.3	4.3	6.7	7.9	8.5	9.7	12.2	9.6	8.4	8.6	8.9	9.5	10.3	10.0	10.4	12.2	10.6	12.0	4.9	5.5	(3.8)	(2.4)
1937	1.4	1.4	1.5	1.6	1.7	1.7	1.6	1.5	1.9	1.9	1.9	2.0	2.2	2.4	2.5	2.5	3.4	5.6	6.7	7.2	8.2	10.4	8.0	6.7	6.8	6.9	7.3	7.8	7.3	7.4	8.5	6.7	7.1	0.8	0.2	(7.4)	(8.6)	(14.4)
1938	1.3	1.4	1.5	1.6	1.7	1.6	1.6	1.5	1.8	1.9	1.9	2.0	2.1	2.3	2.5	2.4	3.3	5.3	6.4	6.8	7.8	9.8	7.5	6.3	6.4	6.5	6.8	7.2	6.6	6.7	7.5	5.9	6.1	0.7	0.2	(5.5)	(5.7)	(7.3)	0.4
1939	1.1	1.1	1.2	1.3	1.4	1.3	1.2	1.1	1.5	1.5	1.5	1.6	1.7	1.9	2.0	1.9	2.7	4.6	5.6	6.0	6.9	8.7	6.5	5.4	5.3	5.4	5.5	5.8	5.2	5.1	5.8	4.1	4.1	(0.7)	(1.4)	(6.2)	(6.5)	(7.9)	(4.4)	(9.0)
1940	1.1	1.2	1.2	1.3	1.4	1.4	1.3	1.2	1.5	1.5	1.5	1.6	1.8	1.9	2.0	1.9	2.7	4.6	5.5	5.9	6.7	8.4	6.3	5.2	5.2	5.2	5.4	5.6	5.0	4.9	5.5	4.0	3.9	(0.3)	(0.8)	(4.8)	(4.7)	(5.3)	(2.1)	(3.3)	2.9
1941	1.2	1.3	1.4	1.5	1.6	1.5	1.5	1.3	1.7	1.7	1.7	1.8	1.9	2.1	2.2	2.1	2.9	4.7	5.6	5.9	6.7	8.4	6.4	5.3	5.3	5.3	5.5	5.7	5.2	5.1	5.6	4.3	4.3	0.5	0.2	(3.1)	(2.8)	(2.9)	0.2	0.1	5.0	7.3
1942	1.3	1.4	1.4	1.5	1.6	1.6	1.5	1.4	1.7	1.7	1.7	1.8	2.0	2.1	2.2	2.2	2.9	4.6	5.5	5.8	6.6	8.1	6.2	5.2	5.2	5.2	5.4	5.6	5.1	5.0	5.4	4.2	4.2	0.8	0.5	(2.4)	(2.0)	(1.9)	0.8	0.9	4.4	5.2	3.2
1943	1.3	1.3	1.4	1.5	1.6	1.5	1.5	1.4	1.7	1.7	1.7	1.8	1.9	2.1	2.2	2.1	2.8	4.5	5.3	5.6	6.3	7.8	5.9	5.0	4.9	4.9	5.0	5.2	4.7	4.6	5.1	3.9	3.8	0.7	0.5	(2.1)	(1.7)	(1.6)	0.7	0.7	3.3	3.5	1.6	0.1
1944	1.3	1.4	1.5	1.5	1.7	1.6	1.5	1.4	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.2	2.9	4.5	5.2	5.5	6.2	7.6	5.9	5.0	4.9	4.9	5.0	5.2	4.7	4.6	5.0	3.9	3.9	1.0	0.8	(1.4)	(1.0)	(0.9)	1.2	1.4	3.6	3.8	2.6	2.3	4.6
1945	1.6	1.7	1.7	1.8	1.9	1.9	1.8	1.7	2.0	2.1	2.1	2.2	2.3	2.5	2.6	2.5	3.2	4.8	5.5	5.8	6.5	7.9	6.2	5.3	5.3	5.3	5.4	5.6	5.2	5.1	5.5	4.5	4.6	2.0	1.9	(0.2)	0.3	0.7	2.7	3.0	5.2	5.7	5.3	6.0	9.1	13.7
1946	1.8	1.8	1.9	2.0	2.1	2.1	2.0	1.9	2.2	2.3	2.3	2.4	2.5	2.7	2.8	2.8	3.4	4.9	5.7	6.0	6.6	8.0	6.3	5.5	5.5	5.5	5.7	5.9	5.5	5.4	5.8	4.9	4.9	2.5	2.5	0.7	1.2	1.6	3.5	3.9	5.9	6.4	6.2	7.0	9.4	11.9	10.2
1947	1.3	1.4	1.5	1.5	1.6	1.6	1.5	1.4	1.7	1.7	1.7	1.8	1.9	2.1	2.2	2.1	2.7	4.2	4.8	5.1	5.7	6.9	5.3	4.5	4.5	4.4	4.5	4.6	4.2	4.1	4.4	3.5	3.4	1.1	0.9	(0.8)	(0.4)	(0.3)	1.3	1.4	2.7	2.7	2.0	1.7	2.1	1.3	(4.3)	(16.9)
1948	1.2	1.3	1.3	1.4	1.5	1.4	1.4	1.3	1.6	1.6	1.6	1.7	1.8	1.9	2.0	1.9	2.5	3.9	4.5	4.8	5.3	6.5	5.0	4.2	4.1	4.1	4.2	4.2	3.8	3.7	3.9	3.0	2.9	0.8	0.6	(1.0)	(0.7)	(0.6)	0.8	0.8	2.0	1.9	1.1	0.7	0.9	0.0	(4.2)	(10.7)	(4.0)
1949	0.9	1.0	1.0	1.1	1.2	1.1	1.1	1.0	1.2	1.2	1.2	1.3	1.4	1.5	1.6	1.5	2.1	3.4	4.0	4.2	4.7	5.8	4.3	3.5	3.4	3.4	3.4	3.5	3.0	2.9	3.1	2.2	2.1	(0.0)	(0.2)	(1.8)	(1.6)	(1.5)	(0.4)	(0.4)	0.5	0.2	(0.6)	(1.2)	(1.4)	(2.5)	(6.2)	(11.1)	(8.1)	(12.0)
1950	0.9	1.0	1.0	1.1	1.2	1.1	1.1	1.0	1.2	1.2	1.2	1.3	1.4	1.5	1.5	1.5	2.0	3.3	3.9	4.1	4.6	5.6	4.2	3.4	3.3	3.3	3.3	3.3	2.9	2.8	3.0	2.1	2.0	0.0	(0.2)	(1.7)	(1.4)	(1.4)	(0.3)	(0.3)	0.5	0.3	(0.5)	(0.9)	(1.1)	(2.0)	(4.9)	(8.3)	(5.2)	(5.8)	0.8
1951	0.5	0.6	0.6	0.6	0.7	0.6	0.6	0.5	0.7	0.7	0.7	0.7	0.8	0.9	0.9	0.8	1.4	2.6	3.1	3.3	3.7	4.7	3.3	2.5	2.4	2.3	2.3	2.3	1.9	1.7	1.8	1.0	0.8	(1.1)	(1.3)	(2.8)	(2.7)	(2.7)	(1.8)	(1.9)	(1.3)	(1.7)	(2.6)	(3.2)	(3.6)	(4.7)	(7.4)	(10.6)	(9.0)	(10.6)	(9.8)	(19.3)
1952	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.3	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.6	1.1	2.3	2.8	3.0	3.4	4.3	3.0	2.2	2.1	2.0	2.0	2.0	1.5	1.3	1.4	0.6	0.4	(1.4)	(1.6)	(3.0)	(2.9)	(2.9)	(2.1)	(2.2)	(1.8)	(2.1)	(2.9)	(3.5)	(3.9)	(4.9)	(7.3)	(10.0)	(8.5)	(9.6)	(8.8)	(13.3)	(6.7)
1953	0.6	0.6	0.7	0.7	0.8	0.7	0.7	0.5	0.8	0.8	0.8	0.8	0.9	1.0	1.0	0.9	1.4	2.6	3.1	3.2	3.7	4.6	3.3	2.5	2.4	2.3	2.3	2.4	1.9	1.8	1.9	1.1	1.0	(0.8)	(1.0)	(2.2)	(2.1)	(2.1)	(1.2)	(1.4)	(0.8)	(1.1)	(1.7)	(2.2)	(2.4)	(3.1)	(5.0)	(7.0)	(5.3)	(5.5)	(3.8)	(5.3)	2.6	12.8
1954	0.6	0.7	0.7	0.7	0.8	0.7	0.7	0.6	0.8	0.8	0.8	0.8	0.9	1.0	1.0	0.9	1.4	2.5	3.1	3.2	3.6	4.5	3.2	2.5	2.4	2.3	2.3	2.3	2.0	1.8	1.9	1.1	1.0	(0.6)	(0.8)	(2.0)	(1.9)	(1.8)	(1.1)	(1.1)	(0.6)	(0.8)	(1.4)	(1.8)	(2.0)	(2.6)	(4.3)	(5.9)	(4.3)	(4.3)	(2.7)	(3.5)	2.4	7.3	2.0
1955	0.3	0.3	0.4	0.4	0.5	0.4	0.3	0.2	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.5	1.0	2.1	2.5	2.7	3.1	3.9	2.6	1.9	1.8	1.7	1.7	1.7	1.3	1.1	1.2	0.4	0.3	(1.3)	(1.5)	(2.7)	(2.6)	(2.6)	(1.9)	(2.0)	(1.6)	(1.9)	(2.5)	(2.9)	(3.1)	(3.8)	(5.4)	(7.0)	(5.7)	(5.9)	(4.9)	(6.0)	(2.3)	(0.7)	(6.9)	(15.0)
1956	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.8	1.8	2.3	2.4	2.8	3.6	2.4	1.7	1.6	1.5	1.4	1.4	1.0	0.8	0.9	0.2	0.0	(1.5)	(1.7)	(2.8)	(2.7)	(2.7)	(2.1)	(2.2)	(1.8)	(2.1)	(2.7)	(3.1)	(3.4)	(4.0)	(5.5)	(6.9)	(5.7)	(5.9)	(5.0)	(6.0)	(3.0)	(2.1)	(6.6)	(10.6)	(6.0)
1957	(0.0)	0.0	0.0	0.1	0.1	0.1	(0.0)	(0.1)	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.1	0.5	1.5	2.0	2.1	2.4	3.2	2.0	1.3	1.2	1.1	1.0	1.0	0.6	0.4	0.5	(0.2)	(0.4)	(1.9)	(2.1)	(3.2)	(3.1)	(3.1)	(2.5)	(2.7)	(2.3)	(2.6)	(3.2)	(3.6)	(3.9)	(4.5)	(5.9)	(7.2)	(6.2)	(6.4)	(5.7)	(6.6)	(4.3)	(3.8)	(7.6)	(10.6)	(8.2)	(10.4)
1958	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.8	1.8	2.3	2.4	2.7	3.5	2.3	1.7	1.6	1.5	1.4	1.4	1.1	0.9	0.9	0.3	0.1	(1.3)	(1.5)	(2.5)	(2.4)	(2.4)	(1.8)	(1.9)	(1.5)	(1.7)	(2.2)	(2.6)	(2.7)	(3.2)	(4.4)	(5.6)	(4.4)	(4.5)	(3.6)	(4.2)	(1.8)	(0.9)	(3.5)	(4.8)	(1.1)	1.5	14.9
1959	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.4	0.4	0.3	0.4	0.4	0.5	0.5	0.4	0.8	1.8	2.2	2.3	2.7	3.4	2.3	1.7	1.6	1.5	1.4	1.4	1.1	0.9	0.9	0.3	0.2	(1.2)	(1.4)	(2.4)	(2.2)	(2.2)	(1.6)	(1.7)	(1.4)	(1.6)	(2.1)	(2.4)	(2.5)	(3.0)	(4.1)	(5.1)	(4.0)	(4.0)	(3.2)	(3.6)	(1.4)	(0.7)	(2.7)	(3.7)	(0.6)	1.3	7.7	0.9
1960	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.0	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.6	1.6	2.0	2.1	2.4	3.1	2.0	1.4	1.3	1.2	1.1	1.1	0.7	0.6	0.6	(0.0)	(0.2)	(1.5)	(1.7)	(2.6)	(2.5)	(2.5)	(2.0)	(2.1)	(1.7)	(2.0)	(2.4)	(2.7)	(2.9)	(3.3)	(4.4)	(5.3)	(4.4)	(4.4)	(3.7)	(4.1)	(2.3)	(1.7)	(3.6)	(4.5)	(2.3)	(1.3)	1.9	(4.0)	(8.7)
1961	(0.1)	(0.1)	(0.1)	(0.0)	0.0	0.0	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.0)	0.0	0.0	(0.0)	0.3	1.2	1.6	1.7	2.0	2.7	1.6	1.0	0.9	0.8	0.7	0.7	0.3	0.2	0.2	(0.4)	(0.6)	(1.9)	(2.0)	(3.0)	(2.9)	(2.9)	(2.4)	(2.5)	(2.2)	(2.5)	(2.9)	(3.2)	(3.4)	(3.9)	(4.9)	(5.8)	(4.9)	(5.0)	(4.4)	(4.9)	(3.3)	(2.9)	(4.7)	(5.6)	(3.9)	(3.5)	(1.7)	(6.7)	(10.3)	(11.9)
1962	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.7	1.6	2.0	2.1	2.4	3.1	2.1	1.5	1.4	1.3	1.2	1.2	0.9	0.7	0.8	0.2	0.1	(1.2)	(1.3)	(2.2)	(2.1)	(2.1)	(1.5)	(1.6)	(1.3)	(1.5)	(1.9)	(2.1)	(2.2)	(2.6)	(3.5)	(4.3)	(3.4)	(3.3)	(2.6)	(2.9)	(1.2)	(0.7)	(2.1)	(2.6)	(0.7)	0.3	2.5	(0.3)	(0.7)	3.5	21.5
1963	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.8	1.6	2.0	2.1	2.4	3.1	2.1	1.5	1.4	1.4	1.3	1.3	0.9	0.8	0.8	0.2	0.1	(1.1)	(1.2)	(2.1)	(1.9)	(1.9)	(1.4)	(1.5)	(1.2)	(1.3)	(1.7)	(1.9)	(2.0)	(2.4)	(3.2)	(3.9)	(3.1)	(3.0)	(2.3)	(2.5)	(1.0)	(0.5)	(1.7)	(2.1)	(0.4)	0.5	2.4	0.1	(0.1)	2.9	11.2	1.8
1964	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.6	1.5	1.8	1.9	2.2	2.9	1.8	1.3	1.2	1.1	1.0	1.0	0.7	0.6	0.6	0.0	(0.1)	(1.2)	(1.4)	(2.2)	(2.1)	(2.1)	(1.6)	(1.7)	(1.4)	(1.6)	(1.9)	(2.2)	(2.3)	(2.6)	(3.4)	(4.1)	(3.3)	(3.2)	(2.6)	(2.8)	(1.5)	(1.0)	(2.2)	(2.6)	(1.1)	(0.4)	1.1	(1.1)	(1.5)	0.4	4.9	(2.6)	(6.7)
1965	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.6	1.4	1.8	1.9	2.2	2.8	1.8	1.3	1.2	1.1	1.1	1.0	0.7	0.5	0.6	0.0	(0.1)	(1.2)	(1.4)	(2.1)	(2.0)	(2.0)	(1.6)	(1.6)	(1.3)	(1.5)	(1.9)	(2.1)	(2.2)	(2.5)	(3.2)	(3.9)	(3.1)	(3.0)	(2.5)	(2.7)	(1.4)	(0.9)	(2.0)	(2.4)	(1.0)	(0.4)	0.9	(0.9)	(1.3)	0.3	3.6	(1.8)	(3.5)	(0.1)
1966	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.6	1.4	1.8	1.8	2.1	2.7	1.8	1.2	1.1	1.0	1.0	1.0	0.7	0.5	0.6	0.0	(0.1)	(1.2)	(1.3)	(2.1)	(2.0)	(2.0)	(1.5)	(1.6)	(1.3)	(1.4)	(1.8)	(2.0)	(2.1)	(2.3)	(3.1)	(3.7)	(2.9)	(2.9)	(2.3)	(2.5)	(1.2)	(0.8)	(1.8)	(2.1)	(0.9)	(0.3)	0.9	(0.8)	(1.0)	0.3	3.0	(1.2)	(2.2)	0.2	0.5
1967	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.6	1.4	1.7	1.8	2.1	2.7	1.7	1.2	1.1	1.0	1.0	1.0	0.7	0.5	0.6	0.0	(0.1)	(1.1)	(1.3)	(2.0)	(1.9)	(1.9)	(1.4)	(1.5)	(1.2)	(1.4)	(1.7)	(1.9)	(2.0)	(2.2)	(2.9)	(3.5)	(2.8)	(2.7)	(2.2)	(2.3)	(1.2)	(0.8)	(1.7)	(1.9)	(0.8)	(0.3)	0.8	(0.7)	(0.9)	0.3	2.5	(0.9)	(1.6)	0.2	0.3	0.1
1968	(0.0)	0.0	0.0	0.1	0.1	0.0	(0.0)	(0.1)	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.4	1.2	1.5	1.6	1.9	2.5	1.5	1.0	0.9	0.8	0.8	0.7	0.5	0.3	0.3	(0.2)	(0.3)	(1.3)	(1.4)	(2.2)	(2.1)	(2.1)	(1.7)	(1.7)	(1.5)	(1.6)	(1.9)	(2.2)	(2.2)	(2.5)	(3.1)	(3.7)	(3.0)	(3.0)	(2.5)	(2.6)	(1.6)	(1.2)	(2.1)	(2.4)	(1.3)	(0.9)	(0.0)	(1.4)	(1.7)	(0.8)	0.9	(2.1)	(2.9)	(1.9)	(2.5)	(4.0)	(7.8)
1969	(0.1)	(0.0)	(0.0)	(0.0)	0.0	0.0	(0.1)	(0.2)	(0.0)	(0.0)	(0.1)	(0.0)	0.0	0.1	0.1	(0.0)	0.3	1.1	1.4	1.5	1.7	2.3	1.4	0.9	0.8	0.7	0.7	0.6	0.3	0.2	0.2	(0.3)	(0.4)	(1.4)	(1.5)	(2.2)	(2.2)	(2.1)	(1.7)	(1.8)	(1.6)	(1.7)	(2.0)	(2.2)	(2.3)	(2.6)	(3.2)	(3.7)	(3.1)	(3.0)	(2.6)	(2.7)	(1.7)	(1.4)	(2.2)	(2.5)	(1.5)	(1.2)	(0.4)	(1.7)	(1.9)	(1.1)	0.3	(2.4)	(3.3)	(2.4)	(3.0)	(4.4)	(6.1)	(4.2)
1970	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2006	1.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(4.4)

INVESTMENT FROM END YEAR

HOW TO USE TABLES OF TOTAL RETURNS

The dates along the top (and bottom) are those on which each portfolio starts; those down the side are the dates to which the annual rate of return is calculated. Thus the figure at the bottom right hand corner – (4.4) – shows that the real return on a portfolio bought at the end of December 2005 and held for one year to December 2006 was minus 4.4%. Figures in brackets indicate negative returns.

Each figure on the bottom line of the table shows the average annual return up to the end of December 2006 from the year shown below the figure. The first figure is 1.1, showing that the average annual rate of return over the whole period since 1899 has been 1.1%.

The top figure in each column is the rate of return in the first year, so that reading diagonally down the table gives the real rate of return in each year since 1899. The table can be used to see the rate of return over any period; thus a purchase made at the end of 1900 would have lost 1.0% of its value in one year (allowing for reinvestment of income) but, over the first five years (up to the end of 1905), would have given an average annual real return of 0.4%.

US real return on equities – gross income re-invested

(annual average rates of return between year ends)

INVESTMENT FROM END YEAR

INVESTMENT TO END YEAR	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1926	11.1
1927	23.9	38.2
1928	29.7	40.2	42.3
1929	16.5	18.4	9.5	(15.7)
1930	6.7	5.7	(3.4)	(20.4)	(24.8)
1931	(3.2)	(5.8)	(14.4)	(27.8)	(33.1)	(40.5)
1932	(2.7)	(4.9)	(11.7)	(21.6)	(23.5)	(22.9)	(0.1)
1933	3.5	2.4	(2.5)	(9.6)	(8.1)	(1.7)	26.4	59.8
1934	3.4	2.5	(1.8)	(7.7)	(6.0)	(0.6)	17.9	28.1	2.7
1935	6.8	6.3	2.9	(1.8)	0.8	6.8	23.7	32.8	21.0	42.7
1936	8.9	8.7	5.8	1.9	4.7	10.7	25.3	32.6	24.6	37.3	32.2
1937	3.9	3.3	0.3	(3.5)	(1.8)	2.0	11.5	14.0	4.8	5.5	(9.3)	(37.7)
1938	5.9	5.5	2.9	(0.3)	1.5	5.4	14.4	17.0	9.9	11.8	3.1	(9.0)	33.1
1939	5.6	5.2	2.8	(0.1)	1.6	5.0	12.7	14.7	8.5	9.7	2.8	(5.5)	16.4	1.8
1940	4.6	4.1	1.9	(0.9)	0.6	3.5	10.1	11.5	5.9	6.4	0.4	(6.3)	7.3	(3.6)	(8.8)
1941	3.0	2.4	0.3	(2.4)	(1.2)	1.3	6.8	7.6	2.4	2.4	(3.1)	(8.9)	0.1	(8.9)	(13.9)	(18.7)
1942	3.2	2.7	0.7	(1.7)	(0.6)	1.8	6.9	7.6	2.9	3.0	(1.7)	(6.4)	1.5	(5.2)	(7.4)	(6.7)	7.1
1943	4.3	4.0	2.1	(0.1)	1.1	3.4	8.3	9.1	5.0	5.3	1.4	(2.4)	5.2	0.4	0.0	3.1	16.1	25.9
1944	5.1	4.8	3.1	1.0	2.3	4.5	9.2	10.0	6.3	6.7	3.3	0.1	7.1	3.3	3.6	7.0	17.2	22.7	19.6
1945	6.5	6.3	4.7	2.9	4.1	6.4	10.9	11.8	8.6	9.1	6.2	3.7	10.5	7.6	8.6	12.4	21.9	27.3	28.1	37.2
1946	5.0	4.7	3.2	1.4	2.5	4.5	8.5	9.1	6.0	6.3	3.4	0.9	6.5	3.6	3.8	6.1	11.9	13.1	9.2	4.3	(20.7)
1947	4.5	4.2	2.8	1.0	2.1	3.9	7.6	8.1	5.1	5.3	2.7	0.4	5.3	2.6	2.7	4.4	8.9	9.2	5.4	1.1	(13.3)	(5.1)
1948	4.3	4.0	2.6	0.9	1.9	3.6	7.1	7.5	4.7	4.9	2.4	0.3	4.7	2.2	2.3	3.7	7.4	7.5	4.1	0.6	(9.3)	(3.0)	(0.9)
1949	5.0	4.8	3.5	1.9	2.9	4.6	7.9	8.4	5.8	6.0	3.8	1.9	6.2	4.0	4.2	5.8	9.3	9.7	7.2	4.8	(2.0)	5.2	10.8	23.8
1950	5.8	5.5	4.3	2.8	3.8	5.5	8.7	9.3	6.8	7.1	5.1	3.4	7.5	5.6	5.9	7.5	10.9	11.4	9.5	7.9	2.8	9.7	15.1	24.1	24.3
1951	6.1	5.9	4.7	3.3	4.3	5.9	9.0	9.5	7.3	7.5	5.7	4.1	8.0	6.3	6.6	8.2	11.3	11.8	10.1	8.8	4.7	10.7	15.1	20.9	19.5	14.9
1952	6.3	6.2	5.0	3.7	4.7	6.3	9.2	9.7	7.6	7.8	6.1	4.6	8.3	6.7	7.1	8.6	11.4	11.9	10.4	9.3	5.9	11.1	14.6	18.9	17.3	13.9	12.9
1953	6.1	5.9	4.8	3.5	4.4	5.9	8.8	9.2	7.1	7.4	5.7	4.3	7.7	6.2	6.5	7.8	10.4	10.7	9.3	8.2	5.0	9.3	11.9	14.7	12.5	8.8	5.9	(0.7)
1954	7.5	7.3	6.3	5.1	6.1	7.6	10.4	10.9	9.0	9.3	7.8	6.6	10.0	8.7	9.2	10.6	13.3	13.8	12.8	12.1	9.6	14.1	17.2	20.5	19.9	18.8	20.1	23.8	54.5
1955	8.0	7.9	7.0	5.9	6.8	8.3	11.0	11.5	9.7	10.1	8.7	7.5	10.9	9.7	10.2	11.6	14.1	14.7	13.8	13.3	11.1	15.4	18.2	21.3	20.8	20.2	21.5	24.5	39.4	25.8
1956	7.9	7.8	6.9	5.8	6.7	8.2	10.8	11.3	9.5	9.9	8.5	7.4	10.6	9.4	9.9	11.2	13.5	14.0	13.1	12.6	10.6	14.4	16.8	19.2	18.5	17.6	18.1	19.5	27.1	15.2	5.5
1957	7.2	7.1	6.2	5.1	5.9	7.3	9.8	10.2	8.5	8.7	7.4	6.3	9.2	8.1	8.5	9.6	11.6	11.9	11.0	10.4	8.4	11.5	13.3	15.0	14.0	12.6	12.2	12.0	15.4	4.8	(4.4)	(13.4)
1958	8.2	8.1	7.2	6.2	7.1	8.4	10.9	11.3	9.7	10.0	8.8	7.8	10.7	9.7	10.1	11.3	13.3	13.7	13.0	12.5	10.8	13.9	15.8	17.7	17.0	16.1	16.3	16.9	20.7	13.5	9.7	11.8	44.5
1959	8.3	8.2	7.3	6.4	7.2	8.5	10.9	11.3	9.8	10.1	8.9	8.0	10.7	9.7	10.1	11.2	13.2	13.6	12.8	12.4	10.8	13.7	15.4	17.0	16.4	15.5	15.6	16.0	19.0	13.0	10.0	11.5	26.6	10.9
1960	8.0	7.9	7.1	6.2	7.0	8.2	10.5	10.9	9.4	9.6	8.5	7.6	10.2	9.3	9.6	10.6	12.4	12.7	12.0	11.6	10.0	12.6	14.1	15.5	14.8	13.8	13.7	13.8	16.1	10.7	7.9	8.5	16.9	5.2	(0.3)
1961	8.5	8.4	7.6	6.7	7.5	8.8	11.0	11.4	10.0	10.2	9.2	8.3	10.9	10.0	10.4	11.4	13.1	13.5	12.8	12.4	11.0	13.5	15.0	16.3	15.7	15.0	15.0	15.2	17.4	12.9	10.8	11.9	19.4	12.0	12.5	27.0
1962	7.9	7.8	7.0	6.1	6.9	8.1	10.2	10.5	9.1	9.4	8.3	7.5	9.8	9.0	9.3	10.2	11.8	12.0	11.3	10.9	9.5	11.8	13.0	14.1	13.3	12.5	12.2	12.2	13.7	9.4	7.3	7.6	12.3	5.5	3.7	5.8	(11.9)
1963	8.2	8.1	7.4	6.5	7.2	8.4	10.5	10.8	9.5	9.7	8.7	7.9	10.2	9.4	9.7	10.6	12.1	12.4	11.7	11.3	10.1	12.2	13.4	14.4	13.8	13.0	12.8	12.8	14.3	10.5	8.7	9.2	13.5	8.2	7.5	10.2	2.7	19.6
1964	8.4	8.3	7.6	6.7	7.5	8.6	10.6	11.0	9.7	9.9	8.9	8.2	10.4	9.6	9.9	10.8	12.3	12.5	11.9	11.6	10.4	12.4	13.5	14.5	13.9	13.2	13.0	13.1	14.4	11.0	9.5	10.0	13.8	9.4	9.1	11.5	6.8	17.6	15.6
1965	8.5	8.4	7.7	6.9	7.6	8.7	10.7	11.0	9.7	10.0	9.0	8.3	10.5	9.7	10.0	10.9	12.3	12.5	12.0	11.6	10.5	12.4	13.5	14.4	13.8	13.1	13.0	13.0	14.2	11.2	9.8	10.3	13.7	9.8	9.6	11.7	8.2	15.9	14.1	12.6
1966	7.9	7.8	7.1	6.4	7.0	8.1	9.9	10.2	9.0	9.2	8.3	7.6	9.6	8.8	9.1	9.9	11.2	11.4	10.8	10.4	9.3	11.0	12.0	12.7	12.1	11.4	11.1	11.0	12.0	9.0	7.6	7.8	10.5	6.8	6.2	7.4	3.8	8.2	4.6	(0.5)	(12.1)
1967	8.3	8.2	7.6	6.8	7.5	8.5	10.3	10.7	9.5	9.7	8.8	8.1	10.1	9.4	9.7	10.4	11.7	11.9	11.4	11.0	10.0	11.7	12.6	13.4	12.8	12.2	12.0	11.9	12.9	10.2	9.0	9.3	11.9	8.8	8.5	9.8	7.2	11.5	9.5	7.6	5.1	25.7
1968	8.3	8.3	7.6	6.9	7.5	8.5	10.3	10.6	9.5	9.7	8.8	8.1	10.1	9.4	9.7	10.4	11.6	11.8	11.3	11.0	9.9	11.6	12.4	13.2	12.6	12.0	11.8	11.8	12.7	10.1	9.0	9.3	11.7	8.8	8.6	9.8	7.5	11.1	9.5	8.0	6.5	17.2	9.4
1969	7.7	7.6	7.0	6.2	6.9	7.8	9.5	9.8	8.7	8.8	8.0	7.3	9.1	8.4	8.7	9.3	10.5	10.6	10.1	9.7	8.7	10.2	10.9	11.5	11.0	10.3	10.0	9.9	10.6	8.1	7.0	7.1	9.0	6.3	5.8	6.5	4.2	6.7	4.7	2.6	0.3	4.8	(4.4)	(16.4)
1970	7.4	7.3	6.7	5.9	6.5	7.5	9.1	9.4	8.2	8.4	7.6	6.9	8.7	8.0	8.2	8.8	9.9	10.0	9.5	9.1	8.1	9.5	10.2	10.7	10.1	9.5	9.2	9.0	9.6	7.2	6.1	6.2	7.8	5.2	4.7	5.2	3.1	5.1	3.2	1.2	(0.9)	2.1	(4.7)	(11.0)	(5.3)
1971	7.5	7.4	6.8	6.1	6.7	7.6	9.2	9.5	8.4	8.5	7.7	7.1	8.8	8.1	8.3	8.9	10.0	10.1	9.6	9.2	8.3	9.6	10.3	10.8	10.3	9.6	9.4	9.2	9.8	7.6	6.5	6.6	8.2	5.8	5.4	5.9	4.0	5.9	4.4	2.8	1.3	4.2	(0.6)	(3.7)	3.4	12.9
1972	7.6	7.6	7.0	6.3	6.8	7.7	9.3	9.6	8.5	8.7	7.9	7.3	8.9	8.3	8.5	9.1	10.1	10.2	9.7	9.4	8.5	9.8	10.4	10.9	10.4	9.8	9.6	9.4	10.0	7.9	6.9	7.0	8.6	6.4	6.0	6.6	4.9	6.7	5.4	4.2	3.0	5.8	2.2	0.5	6.8	13.4	13.9
1973	6.8	6.7	6.1	5.4	6.0	6.8	8.3	8.5	7.5	7.6	6.8	6.2	7.8	7.1	7.3	7.8	8.8	8.8	8.3	7.9	7.0	8.2	8.8	9.2	8.6	8.0	7.7	7.4	7.8	5.8	4.8	4.8	6.0	3.8	3.4	3.6	1.9	3.3	1.8	0.3	(1.1)	0.6	(3.1)	(5.4)	(2.5)	(1.5)	(8.0)	(25.7)
1974	5.7	5.6	5.0	4.3	4.8	5.6	7.0	7.1	6.1	6.2	5.4	4.8	6.2	5.6	5.7	6.1	7.0	7.0	6.4	6.0	5.1	6.2	6.6	6.9	6.3	5.6	5.2	4.9	5.1	3.1	2.1	1.9	2.8	0.7	0.0	0.1	(1.8)	(0.9)	(2.5)	(4.2)	(5.9)	(5.1)	(8.8)	(11.6)	(10.6)	(11.8)	(18.8)	(31.5)	(36.7)
1975	6.1	6.0	5.4	4.8	5.3	6.0	7.4	7.6	6.6	6.7	5.9	5.3	6.8	6.2	6.3	6.8	7.6	7.6	7.1	6.7	5.9	6.9	7.4	7.7	7.1	6.5	6.1	5.8	6.2	4.3	3.3	3.2	4.2	2.2	1.7	1.8	0.2	1.2	(0.2)	(1.5)	(2.8)	(1.7)	(4.7)	(6.5)	(4.8)	(4.7)	(8.7)	(15.1)	(9.3)	30.1
1976	6.4	6.3	5.7	5.1	5.6	6.4	7.7	7.9	7.0	7.1	6.4	5.8	7.2	6.6	6.7	7.2	8.0	8.0	7.5	7.2	6.3	7.4	7.8	8.2	7.6	7.0	6.7	6.5	6.8	5.0	4.1	4.0	5.1	3.2	2.8	3.0	1.5	2.6	1.4	0.3	(0.8)	0.4	(2.0)	(3.4)	(1.4)	(0.7)	(3.2)	(7.1)	0.1	25.9	21.9
1977	6.1	6.0	5.4	4.8	5.3	6.0	7.3	7.5	6.6	6.7	5.9	5.3	6.7	6.1	6.2	6.7	7.5	7.5	7.0	6.6	5.8	6.8	7.2	7.5	7.0	6.4	6.1	5.8	6.1	4.3	3.5	3.4	4.3	2.5	2.1	2.2	0.8	1.7	0.6	(0.5)	(1.5)	(0.5)	(2.8)	(4.1)	(2.4)	(2.0)	(4.3)	(7.5)	(2.3)	12.9	5.1	(9.4)
1978	5.9	5.9	5.3	4.7	5.1	5.9	7.2	7.3	6.4	6.5	5.8	5.2	6.6	6.0	6.1	6.5	7.3	7.3	6.8	6.4	5.6	6.6	7.0	7.2	6.7	6.1	5.8	5.5	5.8	4.2	3.3	3.2	4.1	2.4	2.0	2.1	0.8	1.6	0.5	(0.5)	(1.4)	(0.5)	(2.6)	(3.7)	(2.2)	(1.8)	(3.7)	(6.4)	(1.9)	9.4	3.3	(4.9)	(0.3)
1979	6.0	5.9	5.4	4.8	5.2	6.0	7.2	7.4	6.5	6.6	5.9	5.3	6.7	6.1	6.2	6.6	7.4	7.4	6.9	6.6	5.8	6.7	7.1	7.3	6.8	6.3	6.0	5.7	6.0	4.4	3.6	3.5	4.4	2.8	2.4	2.5	1.3	2.1	1.1	0.2	(0.6)	0.3	(1.5)	(2.5)	(0.9)	(0.5)	(2.0)	(4.1)	0.1	9.7	5.1	0.0	5.1	10.8
1980	6.3	6.2	5.7	5.1	5.5	6.2	7.5	7.7	6.8	6.9	6.2	5.6	6.9	6.4	6.5	6.9	7.7	7.7	7.2	6.9	6.1	7.1	7.4	7.7	7.2	6.7	6.4	6.2	6.5	5.0	4.2	4.2	5.0	3.5	3.1	3.3	2.2	3.0	2.1	1.4	0.6	1.6	(0.0)	(0.8)	0.8	1.4	0.2	(1.4)	2.7	11.3	7.9	4.7	9.8	15.3	19.9
1981	5.9	5.8	5.4	4.7	5.1	5.8	7.1	7.2	6.3	6.4	5.7	5.2	6.5	5.9	6.0	6.4	7.1	7.1	6.7	6.3	5.6	6.5	6.8	7.1	6.6	6.0	5.8	5.5	5.7	4.3	3.5	3.4	4.2	2.7	2.4	2.5	1.4	2.2	1.3	0.5	(0.2)	0.6	(0.9)	(1.7)	(0.4)	0.1	(1.1)	(2.6)	0.7	7.6	4.3	1.1	3.9	5.3	2.6	(12.2)
1982	6.1	6.0	5.5	4.9	5.3	6.0	7.2	7.4	6.5	6.6	6.0	5.4	6.7	6.1	6.3	6.6	7.3	7.3	6.9	6.6	5.9	6.7	7.1	7.3	6.9	6.4	6.1	5.9	6.1	4.7	4.0	3.9	4.7	3.3	3.0	3.1	2.1	2.9	2.1	1.3	0.7	1.6	0.1	(0.5)	0.9	1.4	0.4	(0.9)	2.4	8.7	6.0	3.5	6.3	8.0	7.1	1.3	16.8
1983	6.3	6.2	5.7	5.2	5.6	6.3	7.5	7.6	6.8	6.9	6.2	5.7	6.9	6.4	6.5	6.9	7.6	7.6	7.2	6.9	6.2	7.0	7.4	7.6	7.2	6.7	6.5	6.3	6.5	5.2	4.5	4.5	5.2	3.9	3.6	3.8	2.8	3.6	2.8	2.2	1.7	2.5	1.2	0.7	2.1	2.7	1.8	0.8	3.9	9.8	7.5	5.6	8.3	10.2	10.0	6.9	17.9	19.0
1984	6.2	6.1	5.6	5.0	5.5	6.1	7.3	7.4	6.6	6.7	6.1	5.6	6.8	6.3	6.4	6.7	7.4	7.4	7.0	6.7	6.0	6.8	7.2	7.4	7.0	6.5	6.3	6.1	6.3	5.0	4.3	4.3	5.0	3.7	3.4	3.6	2.7	3.4	2.7	2.1	1.5	2.3	1.1	0.6	1.9	2.4	1.6	0.7	3.5	8.7	6.6	4.8	7.0	8.2	7.7	4.9	11.3	8.6	(0.8)
1985	6.5	6.4	6.0	5.4	5.8	6.5	7.6	7.8	7.0	7.1	6.5	6.0	7.2	6.7	6.8	7.2	7.8	7.8	7.5	7.2	6.5	7.3	7.7	7.9	7.5	7.1	6.9	6.7	6.9	5.6	5.0	5.0	5.7	4.5	4.3	4.5	3.6	4.3	3.7	3.2	2.7	3.5	2.4	2.0	3.3	3.9	3.3	2.5	5.3	10.3	8.5	7.1	9.4	10.9	10.9	9.1	15.2	14.7	12.6	27.9
1986	6.6	6.6	6.1	5.6	6.0	6.6	7.8	7.9	7.1	7.2	6.6	6.2	7.3	6.8	6.9	7.3	8.0	8.0	7.6	7.3	6.7	7.5	7.8	8.1	7.7	7.3	7.1	6.9	7.1	5.9	5.3	5.3	6.0	4.9	4.6	4.8	4.0	4.7	4.1	3.7	3.2	4.1	3.1	2.7	4.0	4.6	4.0	3.4	6.0	10.7	9.1	7.9	10.0	11.3	11.4	10.1	15.1	14.7	13.3	21.1	14.7
1987	6.5	6.4	5.9	5.4	5.8	6.5	7.6	7.7	6.9	7.0	6.4	6.0	7.1	6.6	6.7	7.1	7.7	7.8	7.4	7.1	6.5	7.2	7.6	7.8	7.4	7.0	6.8	6.6	6.8	5.6	5.1	5.0	5.7	4.6	4.4	4.5	3.8	4.4	3.9	3.4	3.0	3.8	2.8	2.4	3.6	4.1	3.6	3.0	5.4	9.6	8.1	6.9	8.7	9.7	9.6	8.2	12.0	11.0	9.1	12.7	5.8	(2.5)
1988	6.6	6.5	6.1	5.5	5.9	6.6	7.7	7.8	7.0	7.1	6.6	6.1	7.2	6.8	6.9	7.2	7.9	7.9	7.5	7.2	6.6	7.4	7.7	7.9	7.6	7.1	6.9	6.8	7.0	5.8	5.3	5.3	6.0	4.9	4.7	4.8	4.1	4.8	4.2	3.8	3.4	4.2	3.2	2.9	4.1	4.6	4.2	3.6	5.9	9.9	8.4	7.4	9.1	10.0	10.0	8.8	12.1	11.4	9.9	12.8	8.2	5.0	13.1
1989	6.8	6.8	6.3	5.8	6.2	6.8	7.9	8.1	7.3	7.4	6.8	6.4	7.5	7.1	7.2	7.5	8.2	8.2	7.8	7.6	7.0	7.7	8.1	8.3	7.9	7.5	7.3	7.2	7.4	6.3	5.8	5.8	6.5	5.4	5.2	5.4	4.7	5.4	4.9	4.5	4.2	4.9	4.1	3.8	5.0	5.5	5.2	4.7	6.9	10.7	9.5	8.6	10.2	11.2	11.3	10.3	13.5	13.1	12.1	14.9	11.9	10.9	18.3	23.7
1990	6.5	6.5	6.0	5.5	5.9	6.5	7.6	7.7	7.0	7.0	6.5	6.1	7.1	6.7	6.8	7.1	7.7	7.7	7.4	7.1	6.5	7.2	7.6	7.8	7.4	7.0	6.8	6.7	6.9	5.8	5.2	5.2	5.9	4.8	4.7	4.8	4.1	4.7	4.2	3.8	3.5	4.2	3.3	3.1	4.1	4.6	4.2	3.7	5.7	9.2	7.9	7.0	8.3	9.1	8.9	7.9	10.4	9.6	8.3	9.9	6.7	4.7	7.3	4.5	(11.8)
1991	6.9	6.8	6.4	5.9	6.3	6.9	7.9	8.1	7.3	7.4	6.9	6.5	7.5	7.1	7.2	7.5	8.1	8.2	7.8	7.6	7.0	7.7	8.0	8.2	7.9	7.5	7.4	7.2	7.4	6.4	5.9	5.9	6.5	5.5	5.4	5.6	4.9	5.6	5.1	4.7	4.4	5.1	4.4	4.2	5.2	5.7	5.4	4.9	7.0	10.3	9.2	8.4	9.8	10.6	10.6	9.8	12.3	11.8	10.9	12.7	10.4	9.5	12.7	12.6	7.4	30.8
1992	6.8	6.8	6.4	5.9	6.3	6.9	7.9	8.0	7.3	7.4	6.9	6.5	7.5	7.1	7.2	7.5	8.1	8.1	7.8	7.5	7.0	7.7	8.0	8.2	7.9	7.5	7.3	7.2	7.4	6.4	5.9	5.9	6.5	5.6	5.4	5.6	5.0	5.6	5.1	4.8	4.5	5.2	4.4	4.2	5.2	5.7	5.4	5.0	6.9	10.1	9.0	8.3	9.6	10.3	10.3	9.5	11.7	11.2	10.4	11.9	9.8	8.9	11.4	11.0	7.0	17.8	6.2
1993	6.9	6.8	6.4	5.9	6.3	6.9	7.9	8.0	7.3	7.4	6.9	6.5	7.5	7.1	7.2	7.5	8.1	8.1	7.8	7.6	7.0	7.7	8.0	8.2	7.9	7.5	7.4	7.2	7.4	6.4	6.0	6.0	6.6	5.7	5.5	5.7	5.1	5.7	5.2	4.9	4.6	5.3	4.6	4.4	5.4	5.9	5.6	5.2	7.0	10.0	9.0	8.3	9.5	10.2	10.2	9.4	11.5	11.0	10.2	11.5	9.6	8.9	11.0	10.5	7.5	14.8	7.5	8.8
1994	6.7	6.7	6.2	5.8	6.1	6.7	7.7	7.8	7.1	7.2	6.7	6.3	7.3	6.9	7.0	7.3	7.9	7.9	7.6	7.3	6.8	7.5	7.8	7.9	7.6	7.3	7.1	7.0	7.2	6.2	5.7	5.7	6.3	5.4	5.2	5.4	4.8	5.4	5.0	4.6	4.4	5.0	4.3	4.1	5.0	5.5	5.2	4.8	6.5	9.3	8.3	7.6	8.7	9.3	9.2	8.5	10.2	9.7	8.9	9.9	8.1	7.3	8.8	8.1	5.2	9.9	3.7	2.5	(3.4)
1995	7.1	7.0	6.6	6.1	6.5	7.1	8.1	8.2	7.5	7.6	7.1	6.7	7.7	7.3	7.4	7.7	8.3	8.3	8.0	7.8	7.3	7.9	8.2	8.4	8.1	7.8	7.6	7.5	7.7	6.8	6.3	6.4	6.9	6.1	5.9	6.1	5.6	6.1	5.7	5.4	5.2	5.9	5.2	5.1	6.0	6.5	6.2	5.9	7.6	10.4	9.5	8.8	9.9	10.6	10.6	10.0	11.8	11.4	10.8	11.9	10.4	9.9	11.6	11.4	9.4	14.2	10.4	11.9	13.5	33.3
1996	7.2	7.1	6.8	6.3	6.7	7.2	8.2	8.3	7.7	7.8	7.3	6.9	7.9	7.5	7.6	7.9	8.5	8.5	8.2	8.0	7.5	8.1	8.4	8.6	8.3	8.0	7.8	7.7	7.9	7.0	6.6	6.6	7.2	6.4	6.2	6.4	5.9	6.5	6.1	5.8	5.6	6.2	5.6	5.5	6.4	6.9	6.6	6.4	8.0	10.7	9.8	9.3	10.3	11.0	11.0	10.4	12.1	11.8	11.3	12.4	11.0	10.7	12.3	12.1	10.6	14.8	11.9	13.3	14.9	25.3	17.7
1997	7.5	7.4	7.0	6.6	7.0	7.5	8.5	8.6	8.0	8.1	7.6	7.2	8.2	7.8	7.9	8.2	8.8	8.8	8.5	8.3	7.8	8.5	8.8	9.0	8.7	8.4	8.3	8.2	8.4	7.5	7.1	7.1	7.7	6.9	6.8	7.0	6.5	7.0	6.7	6.4	6.2	6.9	6.3	6.2	7.1	7.6	7.4	7.2	8.8	11.4	10.6	10.1	11.2	11.8	11.9	11.4	13.1	12.9	12.4	13.5	12.4	12.2	13.8	13.9	12.7	16.7	14.5	16.3	18.2	26.4	23.1	28.8
1998	7.6	7.6	7.2	6.8	7.2	7.7	8.7	8.8	8.2	8.3	7.8	7.4	8.4	8.0	8.1	8.4	9.0	9.0	8.7	8.6	8.1	8.7	9.0	9.2	8.9	8.6	8.5	8.4	8.6	7.8	7.4	7.4	8.0	7.2	7.1	7.3	6.8	7.4	7.1	6.8	6.7	7.3	6.8	6.7	7.6	8.1	7.9	7.8	9.3	11.8	11.1	10.6	11.6	12.3	12.4	11.9	13.6	13.5	13.0	14.0	13.0	12.9	14.4	14.5	13.6	17.2	15.4	17.0	18.7	25.0	22.3	24.7	20.7
1999	7.8	7.8	7.4	7.0	7.4	7.9	8.9	9.0	8.4	8.5	8.0	7.6	8.6	8.2	8.4	8.7	9.2	9.3	9.0	8.8	8.3	9.0	9.3	9.5	9.2	8.9	8.8	8.7	8.9	8.1	7.7	7.7	8.3	7.6	7.5	7.7	7.2	7.8	7.5	7.2	7.1	7.7	7.2	7.1	8.0	8.5	8.4	8.2	9.7	12.2	11.5	11.1	12.1	12.7	12.8	12.5	14.0	13.9	13.5	14.6	13.7	13.6	15.1	15.2	14.4	17.8	16.2	17.7	19.3	24.4	22.3	23.9	21.5	22.4
2000	7.5	7.5	7.1	6.7	7.0	7.6	8.5	8.6	8.0	8.1	7.6	7.3	8.2	7.8	7.9	8.2	8.8	8.8	8.5	8.3	7.9	8.5	8.8	9.0	8.7	8.4	8.3	8.2	8.4	7.5	7.2	7.2	7.7	7.0	6.9	7.1	6.6	7.1	6.8	6.6	6.4	7.0	6.5	6.4	7.2	7.7	7.5	7.3	8.8	11.0	10.3	9.9	10.8	11.3	11.4	11.0	12.3	12.1	11.7	12.5	11.6	11.4	12.5	12.4	11.5	14.1	12.4	13.2	13.8	17.0	14.0	13.1	8.3	2.5	(14.1)
2001	7.2	7.2	6.8	6.4	6.7	7.2	8.2	8.3	7.7	7.7	7.3	6.9	7.8	7.5	7.6	7.9	8.4	8.4	8.1	7.9	7.5	8.1	8.3	8.5	8.2	7.9	7.8	7.7	7.9	7.1	6.7	6.7	7.2	6.5	6.4	6.5	6.1	6.6	6.3	6.0	5.8	6.4	5.9	5.8	6.5	7.0	6.8	6.5	7.9	10.1	9.4	8.9	9.7	10.2	10.1	9.7	10.9	10.6	10.2	10.9	9.9	9.6	10.5	10.3	9.2	11.4	9.6	10.0	10.1	12.2	9.0	7.3	2.6	(2.8)	(13.4)	(12.8)
2002	6.7	6.7	6.3	5.9	6.2	6.8	7.6	7.7	7.1	7.2	6.7	6.4	7.3	6.9	7.0	7.3	7.8	7.8	7.5	7.3	6.8	7.4	7.6	7.8	7.5	7.2	7.1	7.0	7.1	6.3	5.9	6.0	6.4	5.7	5.6	5.7	5.2	5.7	5.4	5.1	4.9	5.4	4.9	4.8	5.5	5.9	5.6	5.4	6.7	8.7	7.9	7.4	8.2	8.5	8.4	7.9	9.0	8.6	8.1	8.6	7.6	7.2	7.9	7.5	6.3	8.0	6.1	6.1	5.8	7.0	3.7	1.6	(3.1)	(8.3)	(16.7)	(18.0)	(23.0)
2003	7.0	7.0	6.6	6.2	6.5	7.1	7.9	8.1	7.4	7.5	7.1	6.7	7.6	7.3	7.3	7.6	8.1	8.1	7.9	7.7	7.2	7.8	8.0	8.2	7.9	7.6	7.5	7.4	7.6	6.8	6.4	6.4	6.9	6.2	6.1	6.3	5.8	6.3	6.0	5.7	5.5	6.1	5.6	5.5	6.2	6.6	6.4	6.2	7.5	9.4	8.7	8.3	9.0	9.4	9.3	8.9	9.9	9.6	9.2	9.7	8.8	8.5	9.2	8.9	7.9	9.6	8.0	8.2	8.1	9.5	6.8	5.4	1.9	(1.5)	(6.7)	(4.1)	0.6	31.4
2004	7.1	7.0	6.7	6.3	6.6	7.1	8.0	8.1	7.5	7.5	7.1	6.8	7.6	7.3	7.4	7.7	8.1	8.2	7.9	7.7	7.3	7.8	8.1	8.2	8.0	7.7	7.5	7.4	7.6	6.8	6.5	6.5	7.0	6.3	6.2	6.3	5.9	6.4	6.1	5.8	5.7	6.2	5.7	5.6	6.2	6.7	6.5	6.3	7.5	9.4	8.7	8.3	9.0	9.4	9.3	8.9	9.9	9.6	9.2	9.7	8.8	8.5	9.2	9.0	8.1	9.6	8.2	8.3	8.3	9.5	7.2	5.9	3.0	0.3	(3.6)	(0.8)	3.5	20.0	9.7
2005	7.0	7.0	6.6	6.2	6.6	7.0	7.9	8.0	7.4	7.5	7.1	6.7	7.6	7.2	7.3	7.6	8.1	8.1	7.8	7.6	7.2	7.8	8.0	8.1	7.9	7.6	7.5	7.4	7.5	6.8	6.4	6.5	6.9	6.2	6.1	6.3	5.8	6.3	6.0	5.8	5.6	6.1	5.6	5.5	6.2	6.6	6.4	6.2	7.4	9.2	8.6	8.1	8.8	9.2	9.1	8.7	9.7	9.4	9.0	9.4	8.6	8.3	8.9	8.7	7.8	9.2	7.8	7.9	7.9	9.0	6.8	5.7	3.1	0.8	(2.4)	0.1	3.6	14.4	6.7	3.9
2006	7.1	7.1	6.7	6.3	6.6	7.1	8.0	8.1	7.5	7.6	7.1	6.8	7.7	7.3	7.4	7.7	8.1	8.2	7.9	7.7	7.3	7.8	8.1	8.2	8.0	7.7	7.6	7.5	7.6	6.9	6.6	6.6	7.0	6.4	6.3	6.4	6.0	6.4	6.2	5.9	5.8	6.3	5.8	5.7	6.4	6.7	6.6	6.4	7.5	9.3	8.7	8.3	9.0	9.3	9.3	8.9	9.8	9.5	9.1	9.6	8.8	8.5	9.1	8.9	8.1	9.5	8.2	8.3	8.3	9.3	7.4	6.4	4.2	2.3	(0.3)	2.2	5.5	14.1	8.9	8.5	13.3

INVESTMENT FROM END YEAR

HOW TO USE TABLES OF TOTAL RETURNS

The dates along the top (and bottom) are those on which each portfolio starts; those down the side are the dates to which the annual rate of return is calculated. Thus the figure at the bottom right hand corner – 13.3 – shows that the real return on a portfolio bought at the end of December 2005 and held for one year to December 2006 was 13.3%.Figures in brackets indicate negative returns.

Each figure on the bottom line of the table shows the average annual return up to the end of December 2006 from the year shown below the figure. The first figure is 7.1, showing that the average annual rate of return over the whole period since 1925 has been 7.1%.

The top figure in each column is the rate of return in the first year, so that reading diagonally down the table gives the real rate of return in each year since 1925. The table can be used to see the rate of return over any period; thus a purchase made at the end of 1926 would have gained 38.1% in value in one year (allowing for reinvestment of income) but, over the first five years (up to the end of 1931), would have fallen in value by an average annual real rate of –5.7%.

US real return on bonds – gross income re-invested

(annual average rates of return between year ends)

INVESTMENT FROM END YEAR (columns) / INVESTMENT TO END YEAR (rows)

	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
1926	8.8																			
1927	10.1	11.3																		
1928	7.1	6.2	1.3																	
1929	5.9	5.0	2.0	2.7																
1930	7.1	6.6	5.1	7.1	11.7															
1931	6.7	6.2	5.0	6.3	8.1	4.6														
1932	9.7	9.9	9.6	11.8	15.0	16.6	30.0													
1933	8.3	8.3	7.8	9.1	10.8	10.5	13.6	(0.8)												
1934	8.3	8.3	7.8	9.0	10.3	9.9	11.8	3.7	8.3											
1935	7.7	7.5	7.1	7.9	8.9	8.3	9.2	3.1	5.1	1.9										
1936	7.5	7.4	7.0	7.7	8.4	7.9	8.5	3.8	5.3	3.9	5.9									
1937	6.6	6.4	6.0	6.5	7.0	6.3	6.6	2.5	3.3	1.7	1.6	(2.6)								
1938	6.8	6.6	6.2	6.7	7.1	6.6	6.9	3.4	4.3	3.3	3.8	2.8	8.5							
1939	6.7	6.5	6.2	6.6	7.0	6.5	6.8	3.8	4.6	3.8	4.3	3.8	7.2	5.9						
1940	6.6	6.5	6.1	6.5	6.9	6.4	6.6	4.0	4.7	4.1	4.5	4.2	6.5	5.6	5.2					
1941	5.6	5.4	5.0	5.3	5.5	5.0	5.0	2.5	3.0	2.2	2.3	1.6	2.6	0.8	(1.7)	(8.2)				
1942	4.9	4.7	4.3	4.5	4.6	4.1	4.0	1.7	2.0	1.2	1.2	0.4	1.0	(0.8)	(2.9)	(6.8)	(5.3)			
1943	4.6	4.4	3.9	4.1	4.2	3.7	3.6	1.5	1.7	1.0	0.9	0.2	0.7	(0.8)	(2.4)	(4.8)	(3.1)	(0.8)		
1944	4.4	4.1	3.7	3.9	4.0	3.4	3.4	1.4	1.6	1.0	0.9	0.2	0.7	(0.6)	(1.8)	(3.5)	(1.9)	(0.2)	0.5	
1945	4.6	4.4	4.0	4.1	4.2	3.8	3.7	1.9	2.1	1.6	1.6	1.1	1.6	0.6	(0.2)	(1.3)	0.5	2.5	4.2	8.1
1946	3.5	3.3	2.9	2.9	3.0	2.4	2.3	0.6	0.7	0.1	(0.1)	(0.7)	(0.5)	(1.5)	(2.6)	(3.8)	(2.9)	(2.3)	(2.8)	(4.4)
1947	2.8	2.6	2.1	2.2	2.2	1.6	1.4	(0.2)	(0.2)	(0.8)	(1.0)	(1.6)	(1.5)	(2.6)	(3.6)	(4.8)	(4.2)	(4.0)	(4.7)	(6.4)
1948	2.7	2.5	2.1	2.1	2.1	1.6	1.4	(0.2)	(0.1)	(0.7)	(0.9)	(1.5)	(1.4)	(2.3)	(3.2)	(4.2)	(3.6)	(3.3)	(3.7)	(4.8)
1949	3.0	2.7	2.4	2.4	2.4	1.9	1.8	0.3	0.4	(0.1)	(0.3)	(0.7)	(0.6)	(1.3)	(2.0)	(2.8)	(2.1)	(1.6)	(1.8)	(2.2)
1950	2.6	2.4	2.0	2.0	2.0	1.5	1.4	(0.0)	0.0	(0.5)	(0.6)	(1.1)	(0.9)	(1.7)	(2.4)	(3.1)	(2.5)	(2.1)	(2.3)	(2.8)
1951	2.1	1.9	1.5	1.5	1.5	1.0	0.8	(0.5)	(0.5)	(1.0)	(1.2)	(1.6)	(1.6)	(2.3)	(2.9)	(3.7)	(3.2)	(3.0)	(3.2)	(3.7)
1952	2.1	1.8	1.5	1.5	1.4	1.0	0.8	(0.5)	(0.5)	(0.9)	(1.1)	(1.5)	(1.4)	(2.1)	(2.7)	(3.3)	(2.9)	(2.6)	(2.8)	(3.2)
1953	2.1	1.9	1.5	1.5	1.5	1.1	0.9	(0.3)	(0.3)	(0.7)	(0.9)	(1.3)	(1.2)	(1.8)	(2.3)	(2.9)	(2.4)	(2.1)	(2.3)	(2.6)
1954	2.3	2.1	1.7	1.8	1.7	1.3	1.2	0.0	0.1	(0.3)	(0.4)	(0.8)	(0.7)	(1.2)	(1.7)	(2.1)	(1.7)	(1.3)	(1.4)	(1.6)
1955	2.2	2.0	1.6	1.7	1.6	1.2	1.1	(0.0)	0.0	(0.3)	(0.5)	(0.8)	(0.7)	(1.2)	(1.6)	(2.1)	(1.6)	(1.3)	(1.3)	(1.5)
1956	1.8	1.6	1.3	1.3	1.2	0.8	0.7	(0.4)	(0.4)	(0.7)	(0.9)	(1.2)	(1.1)	(1.6)	(2.0)	(2.5)	(2.1)	(1.9)	(1.9)	(2.1)
1957	1.9	1.7	1.4	1.4	1.3	1.0	0.8	(0.2)	(0.1)	(0.5)	(0.6)	(0.9)	(0.8)	(1.3)	(1.7)	(2.1)	(1.7)	(1.4)	(1.5)	(1.6)
1958	1.6	1.4	1.1	1.1	1.1	0.7	0.6	(0.4)	(0.4)	(0.8)	(0.9)	(1.2)	(1.1)	(1.6)	(1.9)	(2.3)	(2.0)	(1.8)	(1.8)	(2.0)
1959	1.5	1.3	1.0	0.9	0.9	0.5	0.4	(0.6)	(0.6)	(0.9)	(1.0)	(1.3)	(1.2)	(1.7)	(2.0)	(2.4)	(2.1)	(1.9)	(1.9)	(2.1)
1960	1.7	1.5	1.3	1.3	1.2	0.9	0.8	(0.2)	(0.1)	(0.4)	(0.5)	(0.8)	(0.7)	(1.1)	(1.4)	(1.8)	(1.4)	(1.2)	(1.2)	(1.3)
1961	1.7	1.5	1.2	1.2	1.2	0.8	0.7	(0.2)	(0.1)	(0.4)	(0.5)	(0.8)	(0.7)	(1.1)	(1.4)	(1.7)	(1.4)	(1.1)	(1.2)	(1.3)
1962	1.8	1.6	1.4	1.4	1.3	1.0	0.9	0.0	0.1	(0.2)	(0.3)	(0.5)	(0.4)	(0.8)	(1.1)	(1.3)	(1.0)	(0.8)	(0.8)	(0.9)
1963	1.7	1.5	1.3	1.3	1.2	0.9	0.8	(0.0)	(0.0)	(0.3)	(0.4)	(0.6)	(0.5)	(0.8)	(1.1)	(1.4)	(1.1)	(0.9)	(0.9)	(0.9)
1964	1.7	1.6	1.3	1.3	1.3	1.0	0.9	0.1	0.1	(0.2)	(0.2)	(0.5)	(0.4)	(0.7)	(1.0)	(1.2)	(0.9)	(0.7)	(0.7)	(0.7)
1965	1.6	1.5	1.2	1.2	1.2	0.9	0.8	0.0	0.0	(0.2)	(0.3)	(0.5)	(0.4)	(0.7)	(1.0)	(1.2)	(0.9)	(0.7)	(0.7)	(0.8)
1966	1.6	1.4	1.2	1.2	1.2	0.9	0.8	0.0	0.0	(0.2)	(0.3)	(0.5)	(0.4)	(0.7)	(0.9)	(1.2)	(0.9)	(0.7)	(0.7)	(0.7)
1967	1.4	1.2	0.9	0.9	0.9	0.6	0.5	(0.2)	(0.2)	(0.5)	(0.5)	(0.7)	(0.7)	(1.0)	(1.2)	(1.4)	(1.2)	(1.0)	(1.0)	(1.1)
1968	1.2	1.0	0.8	0.8	0.7	0.4	0.3	(0.4)	(0.4)	(0.6)	(0.7)	(0.9)	(0.8)	(1.1)	(1.4)	(1.6)	(1.3)	(1.2)	(1.2)	(1.3)
1969	0.9	0.7	0.5	0.5	0.4	0.1	0.0	(0.7)	(0.7)	(0.9)	(1.0)	(1.2)	(1.2)	(1.5)	(1.7)	(2.0)	(1.7)	(1.6)	(1.6)	(1.7)
1970	1.0	0.8	0.6	0.6	0.5	0.3	0.2	(0.5)	(0.5)	(0.7)	(0.8)	(1.0)	(1.0)	(1.2)	(1.5)	(1.7)	(1.4)	(1.3)	(1.3)	(1.4)
1971	1.2	1.1	0.9	0.9	0.8	0.6	0.5	(0.2)	(0.2)	(0.4)	(0.5)	(0.6)	(0.6)	(0.9)	(1.1)	(1.3)	(1.0)	(0.9)	(0.9)	(0.9)
1972	1.3	1.1	0.9	0.9	0.8	0.6	0.5	(0.2)	(0.1)	(0.4)	(0.4)	(0.6)	(0.5)	(0.8)	(1.0)	(1.2)	(0.9)	(0.8)	(0.8)	(0.8)
1973	1.0	0.9	0.6	0.6	0.6	0.3	0.2	(0.4)	(0.4)	(0.6)	(0.7)	(0.8)	(0.8)	(1.0)	(1.2)	(1.4)	(1.2)	(1.1)	(1.1)	(1.1)
1974	0.8	0.7	0.5	0.4	0.4	0.1	0.0	(0.6)	(0.6)	(0.8)	(0.8)	(1.0)	(1.0)	(1.2)	(1.4)	(1.6)	(1.4)	(1.3)	(1.3)	(1.4)
1975	0.8	0.6	0.4	0.4	0.4	0.1	0.0	(0.6)	(0.6)	(0.8)	(0.8)	(1.0)	(1.0)	(1.2)	(1.4)	(1.6)	(1.4)	(1.3)	(1.3)	(1.3)
1976	1.0	0.9	0.7	0.6	0.6	0.4	0.3	(0.3)	(0.3)	(0.5)	(0.5)	(0.7)	(0.7)	(0.9)	(1.1)	(1.2)	(1.0)	(0.9)	(0.9)	(0.9)
1977	0.9	0.7	0.5	0.5	0.5	0.3	0.2	(0.4)	(0.4)	(0.6)	(0.7)	(0.8)	(0.8)	(1.0)	(1.2)	(1.3)	(1.1)	(1.0)	(1.0)	(1.1)
1978	0.7	0.5	0.3	0.3	0.3	0.0	(0.1)	(0.6)	(0.6)	(0.8)	(0.9)	(1.0)	(1.0)	(1.2)	(1.4)	(1.6)	(1.4)	(1.3)	(1.3)	(1.3)
1979	0.4	0.3	0.1	0.0	(0.0)	(0.2)	(0.3)	(0.9)	(0.9)	(1.1)	(1.2)	(1.3)	(1.3)	(1.5)	(1.7)	(1.9)	(1.7)	(1.6)	(1.6)	(1.7)
1980	0.2	(0.0)	(0.2)	(0.2)	(0.3)	(0.5)	(0.6)	(1.2)	(1.2)	(1.4)	(1.4)	(1.6)	(1.6)	(1.8)	(2.0)	(2.2)	(2.0)	(1.9)	(1.9)	(2.0)
1981	0.0	(0.1)	(0.3)	(0.3)	(0.4)	(0.6)	(0.7)	(1.3)	(1.3)	(1.5)	(1.5)	(1.7)	(1.7)	(1.9)	(2.1)	(2.3)	(2.1)	(2.0)	(2.1)	(2.1)
1982	0.5	0.4	0.2	0.2	0.1	(0.1)	(0.2)	(0.7)	(0.7)	(0.9)	(0.9)	(1.1)	(1.0)	(1.2)	(1.4)	(1.6)	(1.4)	(1.3)	(1.3)	(1.3)
1983	0.5	0.4	0.2	0.1	0.1	(0.1)	(0.2)	(0.7)	(0.7)	(0.9)	(0.9)	(1.1)	(1.0)	(1.3)	(1.4)	(1.6)	(1.4)	(1.3)	(1.3)	(1.4)
1984	0.7	0.5	0.3	0.3	0.3	0.1	0.0	(0.5)	(0.5)	(0.7)	(0.7)	(0.8)	(0.8)	(1.0)	(1.1)	(1.3)	(1.1)	(1.0)	(1.0)	(1.1)
1985	1.0	0.9	0.7	0.7	0.7	0.5	0.4	(0.1)	(0.0)	(0.2)	(0.2)	(0.4)	(0.3)	(0.5)	(0.6)	(0.8)	(0.6)	(0.5)	(0.5)	(0.5)
1986	1.4	1.2	1.1	1.1	1.0	0.9	0.8	0.3	0.3	0.2	0.2	0.1	0.1	(0.1)	(0.2)	(0.3)	(0.1)	0.0	0.0	0.0
1987	1.2	1.1	1.0	0.9	0.9	0.7	0.7	0.2	0.2	0.1	0.0	(0.1)	(0.0)	(0.2)	(0.3)	(0.4)	(0.2)	(0.1)	(0.1)	(0.1)
1988	1.3	1.2	1.0	1.0	1.0	0.8	0.7	0.3	0.3	0.1	0.1	0.0	0.1	(0.1)	(0.2)	(0.3)	(0.2)	(0.0)	(0.0)	(0.0)
1989	1.5	1.3	1.2	1.2	1.2	1.0	0.9	0.5	0.5	0.4	0.3	0.2	0.3	0.1	0.0	(0.1)	0.1	0.2	0.2	0.2
1990	1.4	1.3	1.2	1.2	1.2	1.0	0.9	0.5	0.5	0.4	0.3	0.2	0.3	0.1	0.0	(0.1)	0.1	0.2	0.2	0.2
1991	1.6	1.5	1.4	1.4	1.4	1.2	1.1	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.3	0.2	0.4	0.5	0.5	0.5
1992	1.7	1.6	1.4	1.4	1.4	1.2	1.2	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.4	0.3	0.5	0.6	0.6	0.6
1993	1.8	1.7	1.6	1.6	1.6	1.4	1.4	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.6	0.5	0.7	0.8	0.9	0.9
1994	1.7	1.6	1.4	1.4	1.4	1.3	1.2	0.8	0.8	0.7	0.7	0.6	0.7	0.5	0.4	0.3	0.5	0.6	0.7	0.7
1995	2.0	1.9	1.8	1.8	1.7	1.6	1.6	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.8	0.8	0.9	1.1	1.1	1.1
1996	1.9	1.8	1.7	1.7	1.7	1.5	1.5	1.1	1.1	1.0	1.0	0.9	1.0	0.8	0.8	0.7	0.9	1.0	1.0	1.0
1997	2.1	2.0	1.8	1.8	1.8	1.7	1.6	1.3	1.3	1.2	1.2	1.1	1.2	1.0	1.0	0.9	1.1	1.2	1.2	1.2
1998	2.2	2.1	2.0	2.0	2.0	1.8	1.8	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.1	1.1	1.2	1.3	1.4	1.4
1999	2.0	1.9	1.8	1.8	1.8	1.6	1.6	1.2	1.2	1.1	1.1	1.1	1.1	1.0	0.9	0.9	1.0	1.1	1.2	1.2
2000	2.2	2.1	2.0	2.0	2.0	1.8	1.8	1.4	1.5	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.3	1.4	1.4	1.4
2001	2.2	2.1	2.0	2.0	2.0	1.8	1.8	1.4	1.5	1.4	1.4	1.3	1.4	1.3	1.2	1.1	1.3	1.4	1.4	1.4
2002	2.3	2.2	2.1	2.1	2.1	2.0	2.0	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.3	1.5	1.6	1.6	1.7
2003	2.3	2.2	2.1	2.1	2.1	2.0	1.9	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.5	1.6	1.6	1.6
2004	2.3	2.3	2.1	2.1	2.1	2.0	2.0	1.6	1.7	1.6	1.6	1.5	1.6	1.5	1.4	1.4	1.5	1.6	1.7	1.7
2005	2.4	2.3	2.2	2.2	2.2	2.0	2.0	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.4	1.6	1.7	1.7	1.7
2006	2.3	2.2	2.1	2.1	2.1	2.0	2.0	1.6	1.7	1.6	1.6	1.5	1.6	1.5	1.4	1.4	1.5	1.6	1.7	1.7

	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
1946	(15.4)																			
1947	(12.9)	(10.4)																		
1948	(8.7)	(5.2)	0.4																	
1949	(4.7)	(0.8)	4.4	8.6																
1950	(4.8)	(2.0)	1.0	1.3	(5.5)															
1951	(5.6)	(3.5)	(1.7)	(2.3)	(7.4)	(9.2)														
1952	(4.7)	(2.8)	(1.2)	(1.6)	(4.9)	(4.5)	0.4													
1953	(3.8)	(2.0)	(0.6)	(0.8)	(3.0)	(2.2)	1.6	2.8												
1954	(2.6)	(0.9)	0.6	0.6	(0.9)	0.3	3.7	5.3	7.9											
1955	(2.4)	(0.9)	0.4	0.4	(0.9)	0.0	2.5	3.2	3.4	(1.0)										
1956	(3.0)	(1.7)	(0.7)	(0.8)	(2.1)	(1.5)	0.1	0.1	(0.8)	(4.9)	(8.7)									
1957	(2.4)	(1.1)	(0.1)	(0.2)	(1.2)	(0.6)	0.9	1.0	0.6	(1.7)	(2.1)	5.0								
1958	(2.7)	(1.6)	(0.7)	(0.8)	(1.8)	(1.4)	(0.2)	(0.3)	(0.9)	(3.0)	(3.6)	(1.0)	(6.7)							
1959	(2.8)	(1.8)	(1.0)	(1.1)	(2.0)	(1.7)	(0.7)	(0.8)	(1.4)	(3.2)	(3.7)	(2.0)	(5.3)	(3.9)						
1960	(1.9)	(0.9)	(0.1)	(0.1)	(0.9)	(0.4)	0.6	0.6	0.3	(0.9)	(0.9)	1.2	(0.0)	3.5	11.5					
1961	(1.8)	(0.8)	(0.1)	(0.1)	(0.8)	(0.4)	0.5	0.5	0.2	(0.8)	(0.8)	0.9	(0.1)	2.2	5.4	(0.4)				
1962	(1.4)	(0.4)	0.3	0.3	(0.3)	0.1	1.0	1.1	0.9	0.1	0.2	1.8	1.1	3.2	5.7	2.9	6.2			
1963	(1.4)	(0.5)	0.1	0.1	(0.5)	(0.1)	0.8	0.8	0.6	(0.2)	(0.1)	1.2	0.6	2.1	3.6	1.1	1.9	(2.3)		
1964	(1.2)	(0.3)	0.3	0.3	(0.2)	0.2	0.9	1.0	0.8	0.1	0.2	1.4	0.9	2.2	3.5	1.6	2.3	0.4	3.1	
1965	(1.2)	(0.4)	0.2	0.2	(0.3)	0.0	0.7	0.7	0.6	(0.1)	0.0	1.0	0.5	1.6	2.6	0.9	1.2	(0.4)	0.5	(2.0)
1966	(1.1)	(0.4)	0.2	0.2	(0.3)	0.0	0.7	0.7	0.6	(0.0)	0.1	1.0	0.5	1.5	2.3	0.8	1.1	(0.2)	0.5	(0.8)
1967	(1.5)	(0.8)	(0.3)	(0.3)	(0.8)	(0.5)	0.1	0.1	(0.1)	(0.7)	(0.7)	0.1	(0.4)	0.3	0.9	(0.6)	(0.6)	(1.9)	(1.8)	(3.4)
1968	(1.7)	(1.0)	(0.5)	(0.5)	(1.0)	(0.8)	(0.2)	(0.3)	(0.5)	(1.0)	(1.1)	(0.4)	(0.9)	(0.3)	0.2	(1.2)	(1.3)	(2.5)	(2.5)	(3.9)
1969	(2.1)	(1.5)	(1.0)	(1.1)	(1.6)	(1.3)	(0.9)	(1.0)	(1.2)	(1.8)	(1.8)	(1.3)	(1.8)	(1.3)	(1.1)	(2.4)	(2.6)	(3.8)	(4.1)	(5.5)
1970	(1.8)	(1.1)	(0.7)	(0.8)	(1.2)	(1.0)	(0.5)	(0.6)	(0.8)	(1.3)	(1.3)	(0.8)	(1.2)	(0.7)	(0.4)	(1.5)	(1.7)	(2.6)	(2.7)	(3.6)
1971	(1.2)	(0.6)	(0.2)	(0.2)	(0.6)	(0.4)	0.1	0.1	(0.1)	(0.5)	(0.5)	0.1	(0.3)	0.3	0.6	(0.3)	(0.3)	(1.0)	(0.9)	(1.4)
1972	(1.1)	(0.5)	(0.1)	(0.1)	(0.5)	(0.3)	0.2	0.2	0.0	(0.4)	(0.4)	0.2	(0.1)	0.3	0.7	(0.2)	(0.1)	(0.8)	(0.6)	(1.0)
1973	(1.5)	(0.9)	(0.5)	(0.6)	(0.9)	(0.7)	(0.3)	(0.3)	(0.5)	(0.9)	(0.9)	(0.4)	(0.8)	(0.4)	(0.1)	(0.9)	(1.0)	(1.6)	(1.6)	(2.1)
1974	(1.7)	(1.1)	(0.8)	(0.8)	(1.2)	(1.0)	(0.6)	(0.7)	(0.8)	(1.2)	(1.3)	(0.8)	(1.2)	(0.8)	(0.6)	(1.4)	(1.5)	(2.1)	(2.1)	(2.6)
1975	(1.6)	(1.1)	(0.8)	(0.8)	(1.2)	(1.0)	(0.6)	(0.7)	(0.8)	(1.2)	(1.2)	(0.8)	(1.1)	(0.8)	(0.6)	(1.4)	(1.4)	(2.0)	(2.0)	(2.4)
1976	(1.2)	(0.7)	(0.4)	(0.4)	(0.7)	(0.5)	(0.1)	(0.2)	(0.3)	(0.7)	(0.6)	(0.2)	(0.5)	(0.1)	0.1	(0.6)	(0.6)	(1.1)	(1.0)	(1.3)
1977	(1.3)	(0.9)	(0.5)	(0.5)	(0.9)	(0.7)	(0.3)	(0.4)	(0.5)	(0.8)	(0.8)	(0.4)	(0.7)	(0.4)	(0.2)	(0.8)	(0.9)	(1.3)	(1.3)	(1.6)
1978	(1.6)	(1.2)	(0.8)	(0.9)	(1.2)	(1.0)	(0.7)	(0.8)	(0.9)	(1.3)	(1.3)	(0.9)	(1.2)	(0.9)	(0.7)	(1.4)	(1.4)	(1.9)	(1.9)	(2.2)
1979	(2.0)	(1.5)	(1.2)	(1.3)	(1.6)	(1.5)	(1.2)	(1.2)	(1.4)	(1.7)	(1.8)	(1.4)	(1.7)	(1.5)	(1.4)	(2.0)	(2.1)	(2.6)	(2.6)	(2.9)
1980	(2.3)	(1.9)	(1.6)	(1.7)	(2.0)	(1.9)	(1.6)	(1.7)	(1.8)	(2.2)	(2.2)	(2.0)	(2.2)	(2.0)	(2.0)	(2.6)	(2.7)	(3.2)	(3.2)	(3.6)
1981	(2.4)	(2.0)	(1.7)	(1.8)	(2.1)	(2.0)	(1.7)	(1.8)	(2.0)	(2.3)	(2.4)	(2.1)	(2.4)	(2.2)	(2.1)	(2.7)	(2.8)	(3.3)	(3.4)	(3.7)
1982	(1.6)	(1.2)	(0.9)	(0.9)	(1.2)	(1.1)	(0.8)	(0.8)	(1.0)	(1.3)	(1.3)	(1.0)	(1.2)	(1.0)	(0.9)	(1.4)	(1.4)	(1.8)	(1.8)	(2.0)
1983	(1.6)	(1.2)	(0.9)	(1.0)	(1.2)	(1.1)	(0.8)	(0.9)	(1.0)	(1.3)	(1.3)	(1.0)	(1.2)	(1.0)	(0.9)	(1.4)	(1.4)	(1.8)	(1.8)	(2.0)
1984	(1.3)	(0.9)	(0.6)	(0.6)	(0.9)	(0.8)	(0.5)	(0.5)	(0.6)	(0.9)	(0.9)	(0.6)	(0.8)	(0.6)	(0.4)	(0.9)	(0.9)	(1.2)	(1.2)	(1.4)
1985	(0.7)	(0.3)	(0.0)	(0.0)	(0.2)	(0.1)	0.2	0.2	0.1	(0.1)	(0.1)	0.2	0.0	0.3	0.5	0.0	0.1	(0.2)	(0.1)	(0.3)
1986	(0.2)	0.2	0.5	0.5	0.3	0.5	0.8	0.8	0.7	0.5	0.6	0.9	0.8	1.0	1.2	0.8	0.9	0.7	0.8	0.7
1987	(0.3)	0.1	0.4	0.4	0.2	0.3	0.6	0.6	0.5	0.3	0.4	0.7	0.5	0.8	0.9	0.6	0.6	0.4	0.5	0.4
1988	(0.2)	0.2	0.5	0.5	0.3	0.4	0.7	0.7	0.6	0.4	0.5	0.8	0.6	0.9	1.1	0.7	0.7	0.5	0.7	0.5
1989	0.1	0.5	0.7	0.7	0.6	0.7	1.0	1.0	1.0	0.8	0.8	1.1	1.0	1.3	1.4	1.1	1.2	1.0	1.1	1.0
1990	0.1	0.5	0.7	0.7	0.6	0.7	1.0	1.0	0.9	0.8	0.8	1.1	1.0	1.2	1.4	1.1	1.1	1.0	1.1	1.0
1991	0.4	0.7	1.0	1.0	0.9	1.0	1.3	1.3	1.3	1.1	1.2	1.5	1.4	1.6	1.8	1.5	1.5	1.4	1.5	1.5
1992	0.5	0.8	1.1	1.1	1.0	1.1	1.4	1.4	1.4	1.2	1.3	1.5	1.5	1.7	1.9	1.6	1.7	1.5	1.6	1.6
1993	0.7	1.1	1.4	1.4	1.2	1.4	1.6	1.7	1.6	1.5	1.6	1.8	1.8	2.0	2.2	1.9	2.0	1.9	2.0	2.0
1994	0.5	0.9	1.1	1.1	1.0	1.1	1.4	1.4	1.4	1.2	1.3	1.6	1.5	1.7	1.9	1.6	1.7	1.5	1.6	1.6
1995	1.0	1.3	1.6	1.6	1.5	1.6	1.9	1.9	1.9	1.8	1.8	2.1	2.0	2.3	2.5	2.2	2.3	2.2	2.3	2.3
1996	0.9	1.2	1.5	1.5	1.4	1.5	1.8	1.8	1.8	1.6	1.7	2.0	1.9	2.1	2.3	2.1	2.1	2.0	2.2	2.1
1997	1.1	1.5	1.7	1.7	1.6	1.8	2.0	2.0	2.0	1.9	2.0	2.2	2.2	2.4	2.6	2.3	2.4	2.3	2.5	2.4
1998	1.3	1.6	1.9	1.9	1.8	1.9	2.2	2.2	2.2	2.1	2.2	2.4	2.4	2.6	2.8	2.6	2.6	2.5	2.7	2.7
1999	1.1	1.4	1.6	1.7	1.5	1.7	1.9	1.9	1.9	1.8	1.9	2.1	2.1	2.3	2.4	2.2	2.3	2.2	2.3	2.3
2000	1.3	1.6	1.9	1.9	1.8	1.9	2.2	2.2	2.2	2.1	2.2	2.4	2.4	2.6	2.8	2.5	2.6	2.5	2.7	2.6
2001	1.3	1.7	1.9	1.9	1.8	2.0	2.2	2.2	2.2	2.1	2.2	2.4	2.4	2.6	2.8	2.5	2.6	2.5	2.7	2.6
2002	1.5	1.9	2.1	2.1	2.0	2.2	2.4	2.5	2.4	2.3	2.4	2.7	2.6	2.8	3.0	2.8	2.9	2.8	2.9	2.9
2003	1.5	1.9	2.1	2.1	2.0	2.1	2.4	2.4	2.4	2.3	2.4	2.6	2.6	2.8	2.9	2.8	2.8	2.7	2.9	2.9
2004	1.6	1.9	2.1	2.2	2.1	2.2	2.4	2.5	2.5	2.4	2.4	2.7	2.6	2.8	3.0	2.8	2.9	2.8	2.9	2.9
2005	1.6	1.9	2.2	2.2	2.1	2.2	2.5	2.5	2.5	2.4	2.5	2.7	2.6	2.9	3.0	2.8	2.9	2.8	2.9	2.9
2006	1.6	1.9	2.1	2.1	2.0	2.2	2.4	2.4	2.4	2.3	2.4	2.6	2.6	2.8	2.9	2.7	2.8	2.7	2.8	2.8

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1966	0.5																			
1967	(4.1)	(8.4)																		
1968	(4.5)	(6.9)	(5.4)																	
1969	(6.3)	(8.5)	(8.5)	(11.5)																
1970	(3.9)	(5.0)	(3.8)	(2.9)	6.4															
1971	(1.3)	(1.7)	0.1	2.0	9.5	12.6														
1972	(0.9)	(1.1)	0.4	1.9	6.8	7.0	1.6													
1973	(2.1)	(2.4)	(1.4)	(0.6)	2.4	1.1	(4.2)	(9.8)												
1974	(2.7)	(3.0)	(2.3)	(1.7)	0.4	(1.1)	(5.3)	(8.5)	(7.3)											
1975	(2.5)	(2.8)	(2.1)	(1.6)	0.2	(1.0)	(4.1)	(6.0)	(4.0)	(0.7)										
1976	(1.2)	(1.4)	(0.6)	0.0	1.8	1.1	(1.1)	(1.8)	1.1	5.5	12.0									
1977	(1.5)	(1.7)	(1.0)	(0.5)	0.9	0.2	(1.8)	(2.4)	(0.5)	1.9	3.1	(5.1)								
1978	(2.2)	(2.5)	(1.9)	(1.6)	(0.4)	(1.2)	(3.0)	(3.8)	(2.5)	(1.3)	(1.5)	(7.7)	(10.3)							
1979	(3.0)	(3.3)	(2.8)	(2.6)	(1.6)	(2.5)	(4.2)	(5.1)	(4.2)	(3.6)	(4.4)	(9.3)	(11.3)	(12.3)						
1980	(3.7)	(4.0)	(3.7)	(3.5)	(2.7)	(3.6)	(5.3)	(6.1)	(5.6)	(5.3)	(6.2)	(10.2)	(11.9)	(12.7)	(13.0)					
1981	(3.8)	(4.1)	(3.8)	(3.7)	(3.0)	(3.8)	(5.3)	(6.1)	(5.6)	(5.3)	(6.1)	(9.4)	(10.4)	(10.4)	(9.5)	(5.7)				
1982	(2.0)	(2.2)	(1.8)	(1.5)	(0.7)	(1.3)	(2.4)	(2.8)	(2.0)	(1.3)	(1.4)	(3.5)	(3.2)	(1.3)	2.6	11.5	31.8			
1983	(2.0)	(2.1)	(1.7)	(1.5)	(0.7)	(1.3)	(2.3)	(2.7)	(2.0)	(1.3)	(1.4)	(3.2)	(2.9)	(1.4)	1.6	7.0	14.0	(1.5)		
1984	(1.4)	(1.5)	(1.0)	(0.7)	0.0	(0.4)	(1.4)	(1.6)	(0.8)	(0.2)	(0.1)	(1.5)	(1.0)	0.6	3.4	8.0	13.0	4.6	11.1	
1985	(0.2)	(0.2)	0.3	0.6	1.4	1.1	0.3	0.2	1.1	1.9	2.2	1.1	1.9	3.8	6.8	11.3	16.0	11.1	18.0	25.3
1986	0.8	0.9	1.4	1.8	2.6	2.4	1.7	1.7	2.7	3.5	3.9	3.2	4.1	6.1	9.0	13.2	17.4	14.0	19.7	24.2
1987	0.5	0.5	1.0	1.3	2.1	1.8	1.2	1.2	2.0	2.8	3.0	2.3	3.0	4.6	7.0	10.2	13.1	9.7	12.6	13.1
1988	0.7	0.7	1.1	1.5	2.2	2.0	1.4	1.4	2.1	2.9	3.1	2.4	3.1	4.6	6.6	9.4	11.8	8.7	10.9	10.8
1989	1.2	1.2	1.6	2.0	2.7	2.5	2.0	2.0	2.8	3.5	3.8	3.2	3.9	5.3	7.3	9.8	11.9	9.4	11.3	11.3
1990	1.1	1.1	1.6	1.9	2.6	2.4	1.9	1.9	2.7	3.3	3.6	3.0	3.6	4.9	6.6	8.8	10.6	8.2	9.6	9.4
1991	1.6	1.6	2.1	2.4	3.1	3.0	2.5	2.5	3.3	3.9	4.2	3.7	4.4	5.6	7.2	9.3	10.9	8.8	10.2	10.1
1992	1.7	1.8	2.2	2.5	3.2	3.0	2.6	2.7	3.4	4.0	4.3	3.8	4.4	5.6	7.1	8.9	10.4	8.4	9.6	9.4
1993	2.1	2.2	2.6	2.9	3.6	3.5	3.1	3.1	3.8	4.4	4.7	4.3	4.9	6.0	7.5	9.3	10.6	8.9	10.0	9.8
1994	1.7	1.8	2.2	2.5	3.1	2.9	2.5	2.6	3.2	3.8	4.0	3.6	4.1	5.1	6.3	7.9	9.0	7.3	8.1	7.8
1995	2.4	2.5	2.9	3.2	3.9	3.8	3.4	3.5	4.1	4.7	5.0	4.6	5.2	6.2	7.5	9.0	10.1	8.6	9.5	9.3
1996	2.3	2.3	2.7	3.0	3.6	3.5	3.1	3.2	3.8	4.3	4.6	4.2	4.7	5.6	6.8	8.2	9.2	7.7	8.5	8.3
1997	2.6	2.6	3.0	3.3	3.9	3.8	3.5	3.6	4.2	4.7	5.0	4.6	5.1	6.0	7.1	8.5	9.4	8.1	8.8	8.6
1998	2.8	2.9	3.3	3.6	4.1	4.1	3.8	3.8	4.4	5.0	5.2	4.9	5.4	6.3	7.3	8.6	9.5	8.2	8.9	8.8
1999	2.4	2.5	2.8	3.1	3.6	3.5	3.2	3.3	3.8	4.3	4.5	4.2	4.6	5.4	6.4	7.5	8.3	7.1	7.6	7.4
2000	2.8	2.9	3.2	3.5	4.0	3.9	3.7	3.7	4.3	4.7	5.0	4.7	5.1	5.9	6.8	7.9	8.7	7.6	8.1	7.9
2001	2.8	2.8	3.2	3.5	4.0	3.9	3.6	3.7	4.2	4.7	4.9	4.6	5.0	5.7	6.6	7.7	8.4	7.3	7.8	7.6
2002	3.1	3.1	3.5	3.8	4.3	4.2	3.9	4.0	4.5	5.0	5.2	4.9	5.4	6.1	6.9	8.0	8.7	7.6	8.1	7.9
2003	3.0	3.1	3.4	3.7	4.2	4.1	3.8	3.9	4.4	4.8	5.0	4.8	5.2	5.8	6.7	7.6	8.3	7.3	7.7	7.6
2004	3.0	3.1	3.4	3.7	4.2	4.1	3.9	3.9	4.4	4.8	5.0	4.8	5.2	5.8	6.6	7.5	8.1	7.2	7.6	7.4
2005	3.1	3.1	3.5	3.7	4.2	4.1	3.9	3.9	4.4	4.8	5.0	4.7	5.1	5.7	6.5	7.4	8.0	7.0	7.4	7.2
2006	3.0	3.0	3.3	3.6	4.0	4.0	3.7	3.8	4.2	4.6	4.8	4.5	4.9	5.5	6.2	7.0	7.6	6.7	7.0	6.8

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1986	23.2																				
1987	7.5	(6.2)																			
1988	6.4	(1.1)	4.1																		
1989	8.0	3.4	8.6	13.2																	
1990	6.4	2.6	5.7	6.5	0.3																
1991	7.7	4.9	7.8	9.1	7.1	14.4															
1992	7.3	4.9	7.2	8.0	6.4	9.5	4.9														
1993	8.0	6.0	8.2	9.0	8.0	10.7	9.0	13.2													
1994	6.1	4.1	5.6	5.9	4.5	5.6	2.8	1.7	(8.6)												
1995	7.9	6.3	8.0	8.5	7.8	9.3	8.1	9.2	7.2	25.7											
1996	6.8	5.3	6.7	7.0	6.1	7.1	5.8	6.0	3.7	10.4	(3.1)										
1997	7.3	6.0	7.3	7.6	7.0	8.0	6.9	7.3	5.9	11.2	4.7	13.0									
1998	7.6	6.4	7.6	8.0	7.4	8.3	7.5	7.9	6.9	11.2	6.7	12.0	10.9								
1999	6.2	5.0	6.0	6.2	5.5	6.1	5.1	5.1	3.8	6.5	2.2	4.0	(0.2)	(10.2)							
2000	6.9	5.8	6.8	7.0	6.4	7.1	6.3	6.5	5.5	8.1	4.9	6.9	5.0	2.2	16.2						
2001	6.6	5.6	6.5	6.6	6.1	6.7	5.9	6.0	5.2	7.3	4.5	6.1	4.4	2.3	9.2	2.6					
2002	7.0	6.1	6.9	7.1	6.7	7.2	6.6	6.8	6.1	8.1	5.8	7.3	6.2	5.1	10.7	8.1	13.9				
2003	6.6	5.7	6.5	6.7	6.2	6.7	6.1	6.2	5.5	7.2	5.1	6.4	5.3	4.2	8.1	5.6	7.1	0.7			
2004	6.5	5.7	6.4	6.6	6.1	6.6	6.0	6.1	5.5	7.0	5.1	6.2	5.2	4.3	7.5	5.4	6.3	2.7	4.7		
2005	6.4	5.6	6.3	6.4	6.0	6.4	5.9	5.9	5.3	6.7	5.0	5.9	5.1	4.3	6.9	5.1	5.7	3.1	4.4	4.0	
2006	6.0	5.2	5.9	6.0	5.6	5.9	5.4	5.4	4.8	6.0	4.4	5.2	4.4	3.6	5.7	4.0	4.3	2.0	2.5	1.4	(1.2)

HOW TO USE TABLES OF TOTAL RETURNS

The dates along the top (and bottom) are those on which each portfolio starts; those down the side are the dates to which the annual rate of return is calculated. Thus the figure at the bottom right hand corner – (1.2) – shows that the real return on a portfolio bought at the end of December 2005 and held for one year to December 2006 was minus 1.2%. Figures in brackets indicate negative returns.

Each figure on the bottom line of the table shows the average annual return up to the end of December 2006 from the year shown below the figure. The first figure is 2.3, showing that the average annual rate of return over the whole period since 1925 has been 2.3%.

The top figure in each column is the rate of return in the first year, so that reading diagonally down the table gives the real rate of return in each year since 1925. The table can be used to see the rate of return over any period; thus a purchase made at the end of 1926 would have gained 11.3% in value in one year (allowing for reinvestment of income) but, over the first five years (up to the end of 1931), would have risen in value by an average annual real rate of 6.2%.