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# Credit Suisse Global Investment Returns Yearbook 2009

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The Credit Suisse Global Investment Returns Yearbook 2009 offers more than 100 years of data on financial market returns, putting the tumultuous events of last year into long-run perspective. Elroy Dimson, Paul Marsh and Mike Staunton of London Business School make a strong case that investors should keep faith with equities – while recognizing that extended holding periods are required to give a reasonable chance of capturing the high return historically given by stocks. They derive long-run expectations for the returns on different asset classes, and estimate how long it may take for equity markets to recover to previous highs. This is a global analysis, covering long-term returns and risks in 17 markets, from Australia, through Switzerland, to the United States. The scale of analysis extends far beyond what can be contained in this Yearbook, so an accompanying volume called the Global Investment Returns Sourcebook contains detailed tables, charts, listings, background, sources and references for every country.

In addition, the Yearbook contains a review by Jonathan Wilmot, Chief Global Strategist for Investment Banking, of major secular and cyclical themes in the world economy over the last 200 years. He not only looks at the Great Depression of the 1930s, but also the successive crises of capitalism that occurred in the nineteenth century, and argues that periodic instability was the price of dynamic long-run progress. He concludes that, provided governments themselves remain creditworthy, the extraordinary policy measures now underway can gradually stabilize global banking and credit markets and lay the basis for sustainable prosperity – but if their creditworthiness fails, it is a long way down.

The Yearbook is the second major project to be presented by the Credit Suisse Research Institute<sup>1</sup>, which links the internal resources of our extensive research teams with world-class external research. We are proud to be associated with the work of Elroy Dimson, Paul Marsh and Mike Staunton, whose book “Triumph of the Optimists” (Princeton University Press, 2002) has had a major influence on investment analysis, and whose work is now updated in this Yearbook for the tenth year. With the unrivalled quality and breadth of their database, the authors are firmly established as the global authority on long-run asset returns.

We look forward to your feedback on this exciting initiative by Credit Suisse.

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<sup>1</sup> The first publication of the Credit Suisse Research Institute is titled: “Intangible Infrastructure: The Key to Growth,” December 2008



# Keeping faith with stocks

When equities bottomed in November 2008, the MSCI World index had fallen 55% – a global loss of over USD 21 trillion, or USD 21,000 for every man, woman and child in the developed world. Faith in equities was shaken as investors had been told that stocks offered the best returns. We believe the basic principles remain true – that stocks still offer the best long-term returns despite their volatility – and that investors should keep faith with stocks.

**Elroy Dimson, Paul Marsh and Mike Staunton**

What should we expect from equities? To answer this requires a long-term perspective. A week may be a long time in politics, but even a decade is too short to judge stock returns. Some decades are depressingly poor, while others are tantalizingly good. To understand equity returns, the long term must be long indeed. Fortunately, the Yearbook database meets this test with 109 years of data for 17 countries that together represent some 90% of world stock market value.

The last decade has been the lost decade. The 21st century began with a savage bear market. By its nadir in March 2003, US stocks had fallen 45%, UK and Japanese equities had halved, and German stocks had fallen by two-thirds. Markets then staged a remarkable recovery, only to plunge again late in 2007 into another epic bear market fuelled by the credit and banking crisis. Since 2000, the MSCI World index has lost a third of its value in real (inflation-adjusted) terms, while the major markets all gave negative real returns of an annualized -4% to -6%.

The demons of chance are meant to be more generous than this. Equity investors require a reward for risk. At the end of 1999, investors cannot have expected, let alone required, a negative risk premium from equities, otherwise they would simply have avoided them. Looking at the nine years that followed does not tell us that risk premiums have decreased, but just that investors were unlucky. Indeed, they received a sav-

age reminder that the very nature of the risk for which they sought a reward means that events can turn out badly, even over multiple years.

Figure 1 shows annualized real returns over three periods for the 17 countries in the Yearbook database. The blue bars relate to 2000–08. Real returns were negative for the world index and the largest markets, and were negative or close to zero everywhere except Australia, South Africa and Norway. 21st century returns have fallen far short of investors' expectations.

In contrast, the grey bars show that the 1990s was a golden age. Inflation fell from the high levels of the 1970s and late 1980s, lowering interest rates and bond yields. Meanwhile, expected profits growth accelerated. This led to strong performance from equities (except in Japan), bonds and even bills (see the 2009 Sourcebook).

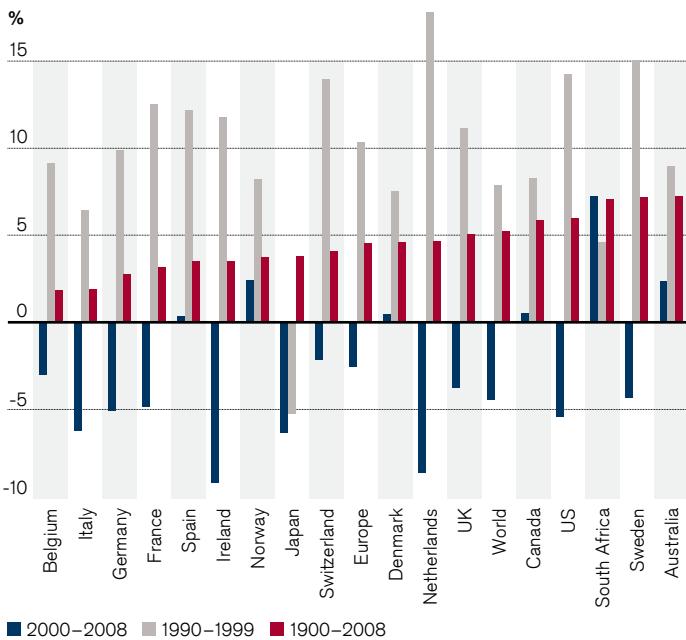
The 1990s contrast starkly with the opening years of the 21st century. Yet the 1990s are just as misleading. Golden ages, by definition, recur infrequently. To understand risk and return in the markets – which is the Yearbook's underlying rationale – we need to examine much longer periods than one, or even two, decades. This is because stock markets are so volatile.

The red bars in Figure 1 show real returns over our full 109-year backhistory. These returns are much less favorable

**Figure 1**

## Real equity returns around the world in recent periods and over the long run

Source: Elroy Dimson, Paul Marsh and Mike Staunton, *Credit Suisse Global Investment Returns Sourcebook 2009* and *Triumph of the Optimists*, Princeton University Press, 2002



than those for the 1990s, but equally, they contrast sharply with the poor returns over 2000–08. They demonstrate the more realistic perspective that longer periods of history can bring. They also provide a reassuring reminder that, over the long run, there has been a reward for the higher risk from investing in stocks.

### Long run returns and extreme periods

An initial sum of USD 1 invested in US equities in 1900 grew, with dividends reinvested, at an annualized rate of 9.2% per year to become USD 14,276 by the end of 2008. Such is the power – over 109 years – of compound interest, “the most powerful force in the universe” (a phrase incorrectly attributed to Albert Einstein).

Since US consumer prices rose by almost 25-fold over this period, it is more helpful to compare returns in real terms. Figure 2 shows that an initial investment of USD 1 would have grown in purchasing power by 582 times. The corresponding multiples for bonds and bills are 9.9 and 2.9 times the initial investment, respectively. These terminal real wealth figures correspond to annualized real returns of 6.0% on equities, 2.1% on bonds and 1.0% on bills.

Besides revealing impressive long-run equity returns, Figure 2 also sets the various bear markets of the last century in perspective. Events that were traumatic at the time now appear just as setbacks within a longer-term secular rise. The boxes in Figure 2 highlight the extremes of stock market performance since 1900, both negative (lower boxes) and positive (upper boxes).

The lower boxes highlight real equity returns in the World Wars and the four worst bear markets – the Wall Street Crash, the 1973–74 oil shock/world recession, the bursting of the internet bubble, and the credit/banking crash that (for equities) began in earnest in November 2007. They show that the

two world wars were less damaging to world equities (real returns of -18% and -12%) than the peacetime bear markets (real returns of -44% to -54%). The worst bear market to date was the Wall Street Crash from 1929 to 1931, when the world index fell by 54% in real, US dollar terms. However, this remains a close call. The peak to trough real return during the current banking/credit crash stands at -53%. If the current remission falters and we hit new lows, it could yet become the worst bear market on record. In its short nine-year life, the 21st century already has the dubious honor of hosting two of the four worst bear markets in history.

The lower boxes in Figure 2 also show real equity returns in the worst afflicted countries in each downturn. Not surprisingly, during the world wars, the losers fared worst. In World War II and its aftermath, Japanese and German equities were decimated, with returns of -96% and -88% respectively, while both US and UK equities enjoyed small positive real returns. Similarly, in each peacetime bear market, the worst hit countries underperformed the world index by 30%–55%. Even in a crash, when correlations rise significantly, global diversification still makes sense.

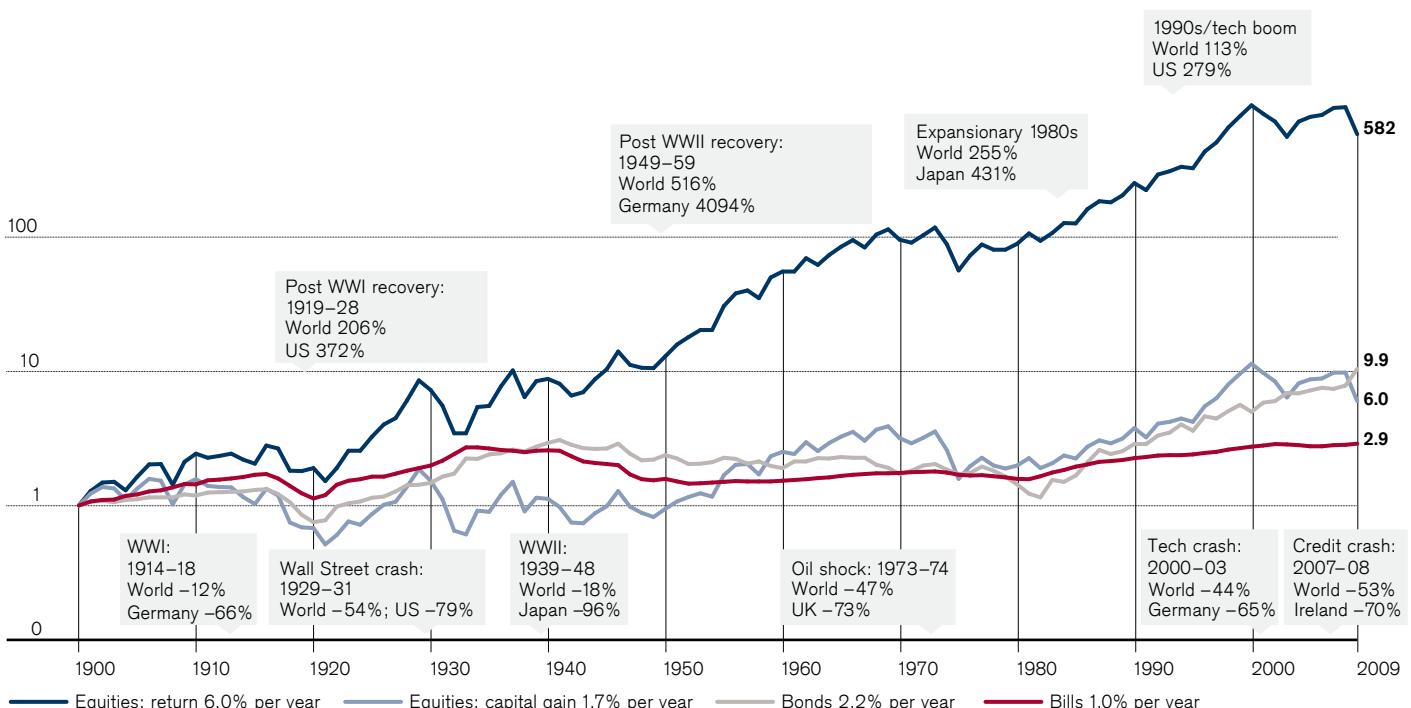
The upper boxes in Figure 2 summarize real returns over four “golden ages.” The 1990s, which we highlighted in Figure 1, was the most muted of the four, with the world index showing a real return of 113%. The world index rose by appreciably more during the 1980s (255% in real terms) and the two post-world war recovery periods – by 206% in the decade after World War I and 516% from 1949 to 1959. During the latter period, several countries enjoyed staggering returns. For example, in the nascent years of the German and Japanese “economic miracles,” real equity returns were 4094% (i.e., 40.4% per year) and 1565% (29.1% per year), respectively.

### Long run returns around the world

Until recently, most of the long-run evidence cited on historical asset returns drew almost exclusively on the US experience. This gives rise to a serious danger of “success” bias, since in the 20th century, the United States rapidly became the world’s foremost political, military, and economic power. By focusing on the world’s most successful economy, investors could gain a misleading impression of equity returns elsewhere, or of future equity returns for the USA itself.

The Yearbook now allows us to make global comparisons. Figure 3 shows annualized real equity, bond and bill returns over the last 109 years for the 17 Yearbook countries plus the world index, the world ex-US, and Europe, ranked in ascending order of equity market performance. The real equity return was positive in every location, typically at a level of 3%–6%. Equities were the best performing asset class everywhere. Furthermore, bonds beat bills everywhere except Germany. This overall pattern of equities beating bonds, and of bonds outperforming bills, is precisely as we would expect, since equities are riskier than bonds, while bonds are riskier than cash.

Figure 3 shows that, while in most countries bonds gave a positive real return, five countries experienced negative returns. The latter were also among the worst equity performers. Mostly, their poor performance dates back to the first half of the 20th century, and these were the countries that suf-

**Figure 2****Cumulative returns on US asset classes in real terms, 1900–2008**Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009 and *Triumph of the Optimists*, Princeton University Press, 2002

fered most from the ravages of war and civil strife, and from periods of high or hyperinflation, typically associated with wars and their aftermath.

As we conjectured, Figure 3 confirms that the USA performed well, with real equity and bond returns of 6.0% and 2.1% per year, respectively, placing it in fourth position for both asset classes. But while US stocks performed well, the USA was not the top performer, nor were its returns especially high relative to the world averages. Many of the best performing equity markets over the last 109 years tended to be resource-rich and, quite often, New World countries.

### The historical equity risk premium

Over the long run, investment in equities has proved rewarding, but has been accompanied by significant volatility. Investors dislike volatility and they will invest in equities only if they expect compensation for this risk. What we would really like to know is what risk premium investors require today, as this determines current valuations and future expected returns. Sadly, there is no reliable way of observing this, but what we can do is measure the risk premium that investors have obtained in the past.

We measure the historical equity premium by comparing past equity returns with the return on risk-free investments. Some people use treasury bills (very short-term, default-free, government securities) as the risk-free benchmark, while others use long-term government bonds. We prefer treasury bills, as bonds are subject to uncertainty about future inflation and real interest rates.

Figure 4 shows the annualized historical equity premiums from 1900 to 2008, with countries ranked by their premium relative to bills, displayed as bars. The annualized premium, relative to bills, was 5.0% for the USA, 3.7% for the world

ex-US and 4.2% for the world. The line-plot shows the premium relative to bonds. The story here is similar, although the premiums are on average 0.8% lower since this is the amount by which bonds outperformed bills. The annualized premium relative to bonds was 3.8% for the USA and 3.4% for the world.

Investors' beliefs about the equity premium remain heavily influenced by Ibbotson Associates' numbers for the United States based on data starting in 1926. The premiums shown in Figure 4 are lower than had previously been thought, because of our global focus and longer time frame.

### Risk premium components

Is the historical equity premium a good guide to what investors expected and priced in beforehand as their required compensation for risk? Because equities are so volatile, we cannot be sure of this, even over periods as long as 109 years. Investors may have enjoyed more than their share of good luck, making the past too good to last. If so, the historical premium would reflect "the triumph of the optimists" – the success of equity investors – and overstate what we could expect in future.

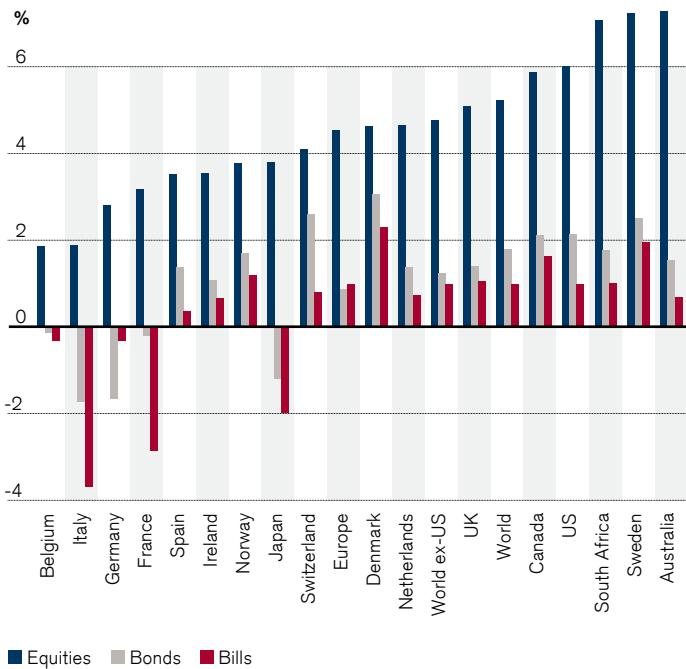
An alternative approach is to delve deeper to infer what investors in each country were expecting, on average, in the past. We do this by decomposing the historical premium into three major components, namely, (i) the (geometric) mean dividend yield net of the real risk free rate, (ii) the annualized growth rate of real dividends, and (iii) the annualized change in the price/dividend ratio over time.

Of these three, the dividend yield has been the dominant factor historically. This may seem surprising, since day-to-day, investors seem focused on capital gains and stock price movements. Indeed, over a single year, equities are so volatile that most of an investor's return comes from capital gains or losses, with dividends adding a relatively modest amount.

**Figure 3**

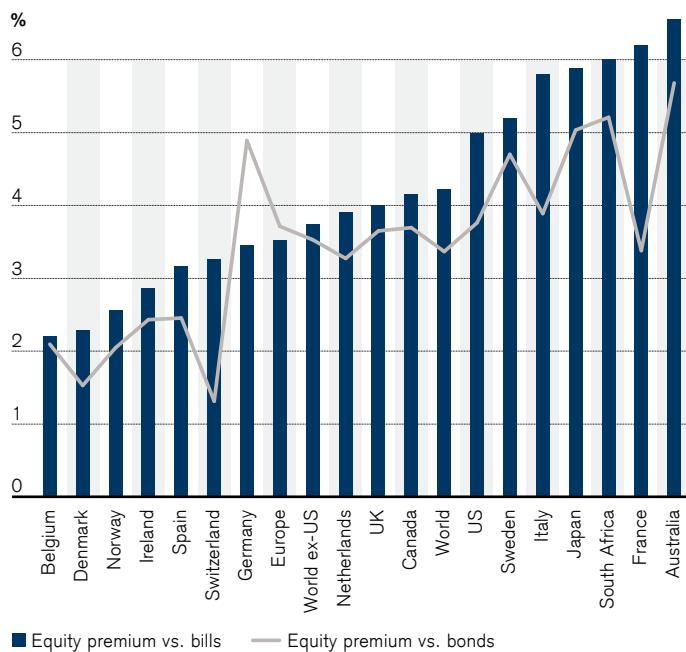
### Real returns on equities, bonds and bills internationally, 1900–2008

Source: Elroy Dimson, Paul Marsh and Mike Staunton, *Credit Suisse Global Investment Returns Sourcebook 2009* and *Triumph of the Optimists*, Princeton University Press, 2002

**Figure 4**

### Worldwide annualized risk premiums relative to bills and bonds, 1900–2008

Source: Elroy Dimson, Paul Marsh and Mike Staunton, *Credit Suisse Global Investment Returns Sourcebook 2009* and *Triumph of the Optimists*, Princeton University Press, 2002



However, reinvested dividends dominate long-run returns. Looking back at Figure 2, we can see the large difference in terminal wealth that arises from reinvested income. The darker blue line shows the total return from a policy of investing USD 1 in US stocks at the start of 1900, and reinvesting all dividend income. It shows that, 109 years later, the initial investment would have grown in purchasing power by 582 times, giving a total real return of 6.0% per year.

The light blue line shows the return obtained by a fund that paid out all of its income to beneficiaries, rather than reinvesting dividends. This line shows that the USD 1 initial investment would have grown to just six times its initial value, equivalent to a real capital gain of 1.7% per year. Thus a portfolio of US equities, with dividends reinvested, would have grown to almost 100 times the value it would have attained if the investor had spent or squandered the dividends.

The longer the investment horizon, the more important is dividend income. For the seriously long-term investor, the value of a portfolio corresponds closely to the present value of dividends. The present value of the (eventual) capital appreciation dwindles greatly in significance.

The other two major components of the equity premium are the growth rate of real dividends and the change in the price/dividend ratio. The grey bars in Figure 5 show annualized real dividend growth from 1900 to 2008, with countries ranked in ascending order from left to right. They reveal that real dividend growth has been lower than is often assumed. Real US dividends grew at an annualized rate of just 1.2%, but this was enough to place the USA in the second highest position. Most countries recorded real dividend growth of less than 1% per year, and dividend growth for the world index was only 0.65%. Dividends and, probably, earnings have barely outpaced inflation. The final contributor to the equity risk premium is changes in valuation ratios, but the red bars in Figure 5 show that the importance of this can also be overstated. Over the last 109 years, the price/dividend ratio of the world index grew by just 0.36% per year.

#### Investors' expectations

Figure 4 showed that the annualized historical risk premium relative to bills on a globally diversified equity portfolio (the world index) was 4.2%. This comprises 3.2% for the amount by which annual dividends exceeded the real risk free rate, 0.65% per year from real dividend growth and 0.36% per year from re-rating, i.e., an increase in the price to dividend ratio. Using this decomposition, we can now return to the question of whether 4.2% was what investors required/expected in advance. Our analysis (see the Sourcebook for details) indicates that part of this amount arises from past good fortune and factors that are unlikely to recur.

For example, the gradual re-rating of equities over the last century reflects – at least in part – reduced investment risk. In 1900, most investors held a limited number of domestic stocks from a few industries – railroads then dominated. As the century evolved, new industries emerged, diversified closed- and open-ended funds appeared, liquidity and risk management improved, and institutions and wealthy individuals invested globally. As equity risk became more diversifiable, the required risk premium is likely to have fallen. This will have driven stock

prices higher, but it would be perverse to interpret this rise as evidence of an increased risk premium. Furthermore, insofar as stock prices rose because of disappearing barriers to diversification, this phenomenon is non-repeatable and we should not expect such re-rating to persist.

Similarly, our analysis indicates that dividend growth turned out to be higher than expected. The 20th century opened with much promise, and only a pessimist would have believed that the next 50 years would involve widespread civil and international wars, the Wall Street Crash, Great Depression, episodes of hyperinflation, the spread of communism, and the start of the Cold War. During 1900–1949, the annualized real return on the world equity index was 3.5%. By 1950, only the most rampant optimist would have dreamt that over the following half-century, the annualized real return would be 9.0%. Yet the second half of the 20th century was a period when many events turned out better than expected. There was no third world war, the Cuban missile crisis was defused, the Berlin Wall fell, the Cold War ended, productivity and efficiency accelerated, technology progressed, and governance became stockholder driven. The 9.0% annualized real return on world equities from 1950 to 1999 almost certainly exceeded expectations and more than compensated for the poor first half of the 20th century.

This type of reasoning coupled with more formal analysis leads us to conclude that the 4.2% per year historical equity premium on the world index exceeded expectations, and was higher than the premium investors required in advance. After adjusting for non-repeatable factors, we infer that investors expect an annualized equity premium (relative to bills) of around 3%–3.5%. This is below the long run historical premium and well below the premium in the second half of the 20th century. Many investment books still cite figures as high as 7%, but investors who rely on such numbers are likely to be disappointed.

Nevertheless, even with a lower equity risk premium of 3.5% per year, equity returns still compound rapidly. Equity investors can expect to be more than 40% richer relative to investing in cash over a 10-year horizon, and twice as rich over 20 years. This represents a substantial premium that should encourage investors not to lose faith in equities.

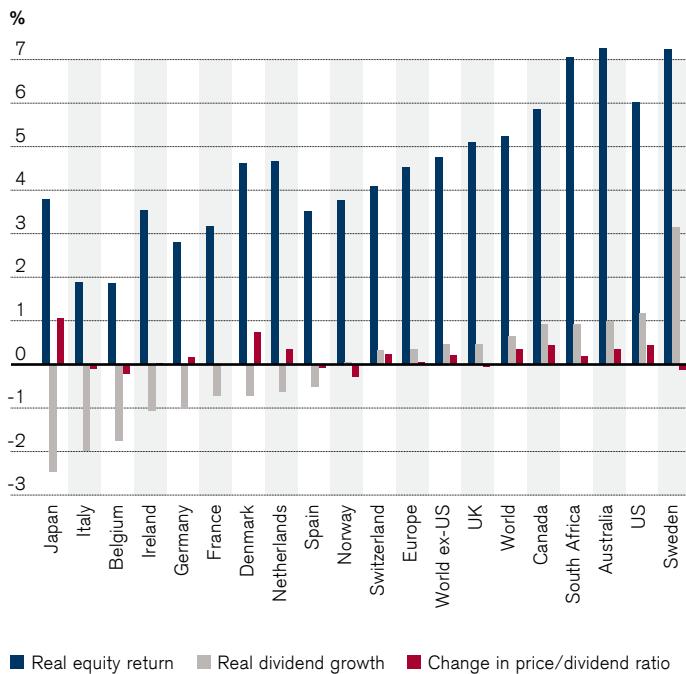
However, while investors should keep faith with stocks, they should not harbor fantasies of an immediate return to either previous (and with hindsight, unrealistic) market levels, or to previous high rates of return. As we show in the following article, markets are likely to take a long time to recover from the battering they have received during the credit and banking crisis.

In spite of this, we are confident that equity investors should continue to expect an appreciable long-run risk premium, albeit a somewhat smaller one than historically. We were spoiled by the high returns of the 1980s and 1990s, when equities seemed a sure fire route to getting rich quickly. Today, as we look ahead, while we should expect to enrich ourselves from equities, the process is likely to be one of getting rich more slowly. However, this does not mean getting steadily richer. Equity returns are far from steady – they are very volatile. Markets will not get to their higher destination smoothly: returns could easily come in short bursts rather than gently over time. We need to take a long-term view, and be ready for the inevitable periodic setbacks, which can be severe, while recognizing that there are risks to being out of equities as well as in.

**Figure 5**

### Real dividend growth around the world, 1900–2008

Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009 and *Triumph of the Optimists*, Princeton University Press, 2002





# Looking to the long term

Portfolio management typically involves three decisions. To start, one needs to decide on the long-term strategic weight for each asset class. Next, one tries to identify shorter-term deviations from the long-term weights, taking advantage of skill in identifying mispriced asset classes. Last, there is the search for securities that are under- or over-priced. This article informs the first decision by developing the assumptions that drive long-term asset allocation.

**Elroy Dimson, Paul Marsh and Mike Staunton**

The standard approach to asset allocation begins by establishing the policy portfolio. This depends on the investor's financial situation and risk tolerance, as well as the long term prospects for different asset classes. This sets the long-run benchmark asset allocation, which stays fixed unless investment objectives or financial conditions change. However, the actual portfolio may fluctuate around this long-term ideal to take advantage of short-term opportunities.

Our focus is on the long-run return forecasts that determine the policy portfolio. Forecasting the future is difficult, so it makes sense to marshal the resources of many clever people. We do this by using market prices as a reference point, since these reflect the collective judgments of smart investors who are backing their views with their money. We also utilize past experience, based on careful analysis of the Yearbook's long-run database.

We use a building block approach to generate return projections. Figure 1 illustrates this for the example of a style-tilted equity portfolio. On the left of the chart, we start with the rate of inflation that is implied by inflation-linked and conventional bond yields. To this breakeven inflation, we add the real yield of long-maturity inflation linked bonds. The total is the expected return on conventional long bonds. We deduct the maturity premium, which gives the expected long-run return on Treasury bills. To the latter, we add the equity risk

premium and, if applicable, a style premium (which can be negative). The final bar depicts the expected return on the portfolio. This is the return prediction to use for constructing the policy portfolio.

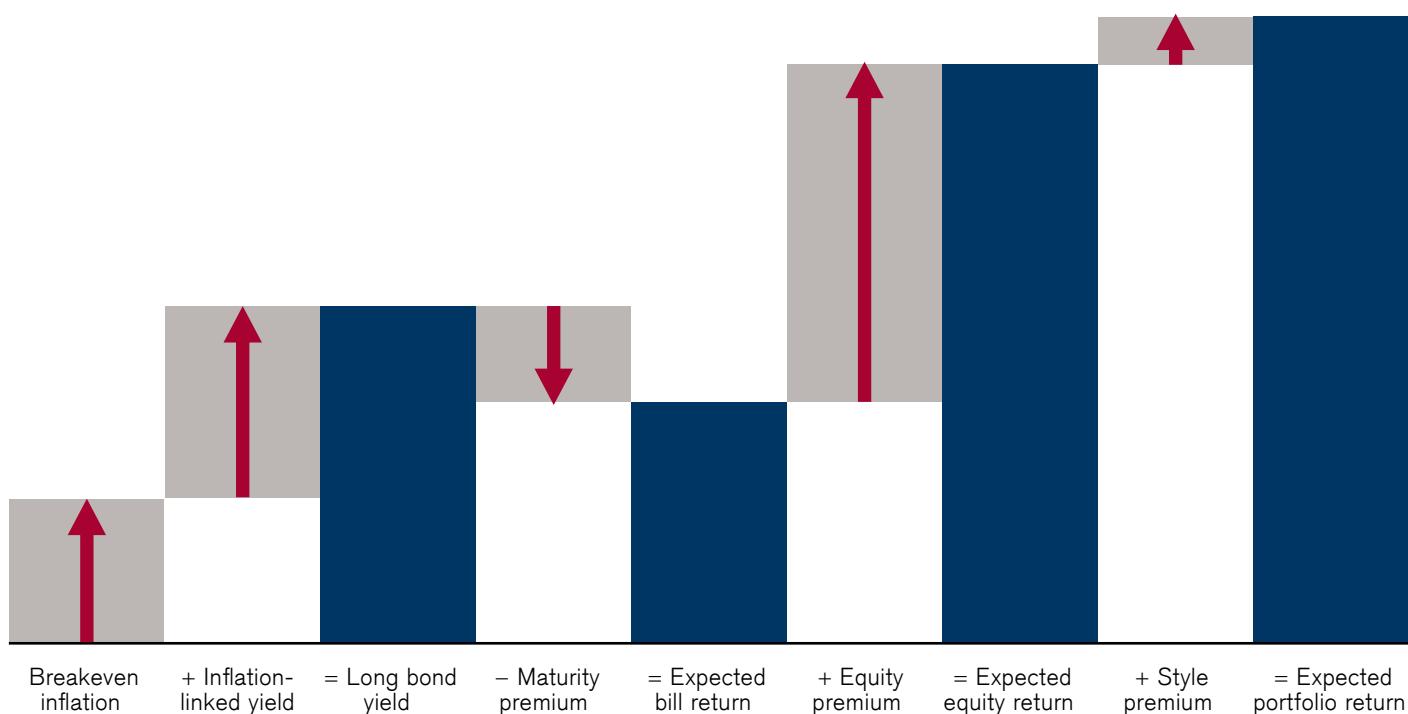
In this article, we show how to develop these long-term return forecasts. Over the long haul, investments are expected to provide a total return, incorporating both income and capital appreciation, that is consistent with the quantum of risks and costs that they add to a portfolio. When some assets have higher expected returns than others, this does not mean that low-return assets are dominated and should be avoided. Higher expected returns tend to be associated with riskier and less liquid assets. These higher expected returns are a reward for exposure to risk attributes that are unattractive to most investors.

Long-term forecasts sit alongside short- and medium-term predictions. In Credit Suisse, these are based on macroeconomic and fundamental analysis, balanced with judgmental inputs, and they are inputs to a portfolio management process that aims to generate performance that beats the policy portfolio.

In contrast, our approach is to generate a set of complementary long-term projections. We visualize these as being valid over a horizon of 20 or 30 years – a horizon that is long enough to be unaffected by shorter-term fluctuations. While

**Figure 1****The build-up approach to expected portfolio returns**

Source: Elroy Dimson, Paul Marsh and Mike Staunton



contemporary market conditions will influence short-term prospects for, say, 2010, they are unlikely to have the same impact on expectations for 2030 or 2040.

We should stress that we are simply demonstrating a methodology. Many technical adjustments and complex estimation issues could be addressed. However, in this article, we bypass technical detail, and discuss the approach in broad-brush terms. To explain how it may be applied, we provide some point forecasts, but these should be regarded as illustrative. Readers who wish to update projections or develop a more personal view can modify our estimates.

### **The expected equity premium**

In the previous article, we showed that markets have experienced quite variable returns over the last 109 years. Without doubt, some markets were blessed with good fortune while others were cursed with bad luck. Since chance events are by definition unpredictable, we cannot simply extrapolate from a country's past performance to its future.

What equity premium can we reasonably anticipate for the future? We saw in the previous article that the annualized historical equity premium relative to bills was 4.2% for the world index. We argued that this was higher than investors can expect in future, and that a more realistic projection of the equity premium (relative to bills) on global equities was 3%-3.5%. We noted that, with an annualized premium of 3.5%, equity returns still compound relatively fast, and long-term investors are likely (though they are not guaranteed) to become appreciably wealthier by investing in equities.

Today's starting point is from a depressed equity market. Because markets have fallen, investors are poorer and anticipate lower income, which is likely to make them more averse to risk. At the same time, markets have been volatile. As the

risk premium is a reward per unit of risk, and since both risk and risk aversion have increased, we infer that the short-term risk premium exceeds the long-run average. The good news is that short-term expected returns are likely to be high. The bad news is that risk is correspondingly high.

### **Mean reversion**

This helps explain why equity markets may appear to revert to the mean. First, they seem to overshoot when corporate earnings expectations collapse and markets decline. This makes investors poorer and more risk averse, which further lowers stock prices because investors discount cash flows at a higher rate. Similarly, when markets recover, this process goes into reverse. The risk premium is not constant over time, but varies with investors' risk aversion and with fluctuations in risk levels.

When shares are depressed, investors buy equities at a lower price, meaning (other things held constant) higher future cash flows per dollar. Taken together with the impact of increased volatility and reduced risk tolerance, short-term expected returns may be enhanced by a market fall. However, these effects may be brief. Lower stock prices may have an impact on immediate returns, but the effect on long-term investment performance will be diluted. Moreover, volatility does not usually stay for long at abnormally high levels, and investor sentiment is also mean reverting.

We illustrate this by looking at the impact of short-term market fluctuations on realized equity risk premiums. We classify countries cross-sectionally, according to whether their one-year equity premium was unusually low or high relative to other countries' contemporaneous premiums. Starting at end-1909, we rank the equity premiums achieved over the prior year. We assign countries to groups. Group 1 contains

countries with the lowest prior-year premium; group 5 contains countries with the highest prior-year premium. Within groups, we invest an equal amount in each country and hold the resulting portfolio for five years. We re-rank countries annually until end-2003, reconstruct groups, and compute a sequence of annualized five-year equity premiums.

We also classify countries by time series, according to whether their realized one-year equity premium was unusually low relative to previous premiums for the same country. We compare the realized equity premium for each country to all of its preceding one-year premiums since 1900. Starting at end-1909, we record the rank of that year's realized premium. We assign countries to groups. Group 1 contains countries with the lowest prior-year premium; group 5 contains countries with the highest. Within groups, we invest an equal amount in each country, and hold the resulting portfolio for five years. We re-rank countries annually until end-2003, reconstruct groups, and compute a sequence of annualized five-year equity premiums.

The five-year returns run from 1910–14 to 2004–08. In Figure 2, we present the average of the 95 post-ranking returns for cross-sectional groups 1 to 5 (left-hand chart) and for time-series groups 1 to 5 (right-hand chart). There is not much difference between the long-term premium from buying stocks in countries with prior-year performance that was relatively low or high. Similarly, there is little difference if we extend the holding period, delay the purchase by one or two years after ranking, or start the ranking in 1900. However, if we shorten the holding period to only one or two years, the pattern in both halves of Figure 2 reverses, and performance after a low excess return is slightly poorer. For strategic asset allocation, we learn relatively little (and nothing statistically significant) from recent annual performance about future equity premiums.

The mean reversion effect is, at best, of modest magnitude, and many researchers dispute its existence. While some experts say that knowledge of current and recent market conditions can improve market predictions, others conclude that one cannot do better than make a forecast that the future risk premium will resemble the (long-term) past. Moreover, while we would make a lot of money if we managed to invest at the bottom of the market, sadly, we can identify the bottom only with hindsight. Many of the world's most celebrated investors called the bottom too early in 2008, and we cannot yet be confident that the worst is behind us. Our evidence is consistent with the view that it is hard to improve on extrapolation from the longest history that is available at the time the forecast is being made.

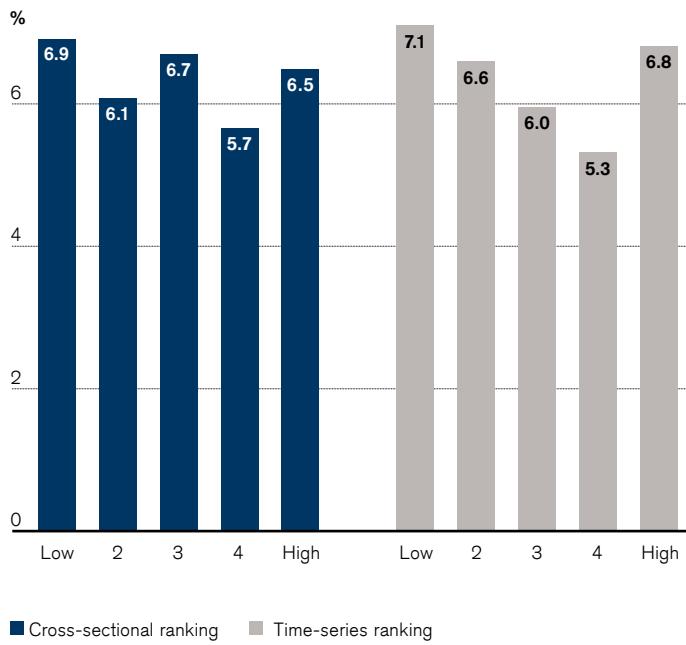
## Risk and style

We argued above that investors can expect a long-run equity premium of around 3%–3.5%. However, this is an average for the world index, and markets differ in their risk. Recent events have shown how some locations are more exposed to a bear market than others. For example, the substantial exposure of Belgium and Ireland to the banking sector amplified the downside risk of these markets. If countries are riskier or safer than the world index, this should be reflected in their equity premium.

**Figure 2**

### Annualized five-year equity premium after a year in which the excess return was low, middling or high, 1910–14 to 2004–08

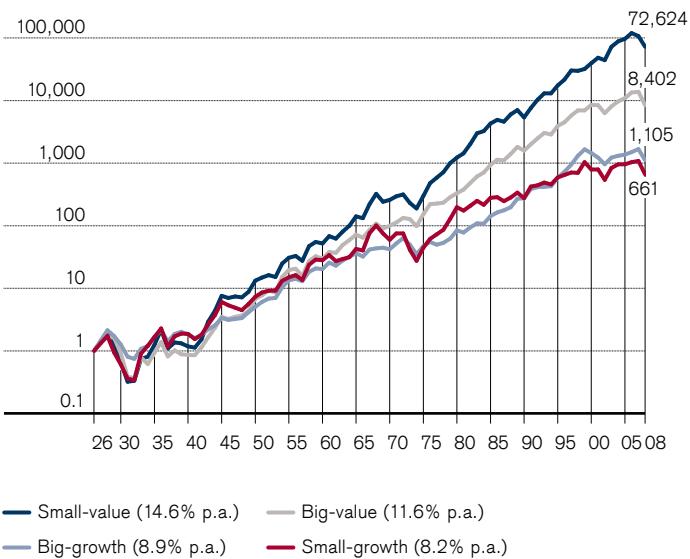
Source: Elroy Dimson, Paul Marsh and Mike Staunton



**Figure 3**

### Size and style effects in the US market, 1926–2008

Source: Ken French's website (2009) and Elroy Dimson, Paul Marsh and Mike Staunton



We can estimate the relative risk for each country by computing its beta relative to the World equity index. Beta measures the percentage return each market tends to experience for each 1% return in the world index. There are many ways of estimating betas. To investigate which works best, we have checked how well each method predicts country returns, conditional on the world index return, when betas are estimated using only data available prior to the prediction.

We find that the best betas use data spanning a relatively long period, and that raw betas need to be adjusted for estimate error and bias. Using this approach, we find that country betas cluster around one, with few lying outside the range 0.8 to 1.2. This means that for the countries and regions analyzed by Credit Suisse, beta typically modifies the annualized worldwide premium by no more than plus or minus 0.5%.

#### Size premium

In addition to an equity premium that varies geographically, one can also categorize equity strategies by the size of company targeted for the portfolio and/or the manager's investment style (a tilt towards value stocks or growth stocks). Our approach for estimating expected returns for these market segments is based on adding size and style premiums (which may be positive or negative) to the equity premium for core equities.

Smaller companies impose higher monitoring, transaction and management costs, and greater idiosyncratic risk on investors. However, over the long haul, they have outperformed larger companies. For the USA, over the longest available period (1926–2008), the difference between the returns on the CRSP low-cap index and the total equity market has been an annualized 1.4% (CRSP is the University of Chicago's Center for Research in Security Prices). In the UK, over the longest available period (1955–2008), the difference between the returns on the HGSC low-cap index and the total equity market has been an annualized 2.3% (the HGSC is the Hoare Govett Smaller Companies index).

To estimate the long-run expected return for portfolios that emphasize small- and mid-sized companies, there should therefore be an incremental premium. Conversely, for portfolios that favor the largest companies, there should in principle be a small reduction in their expected return.

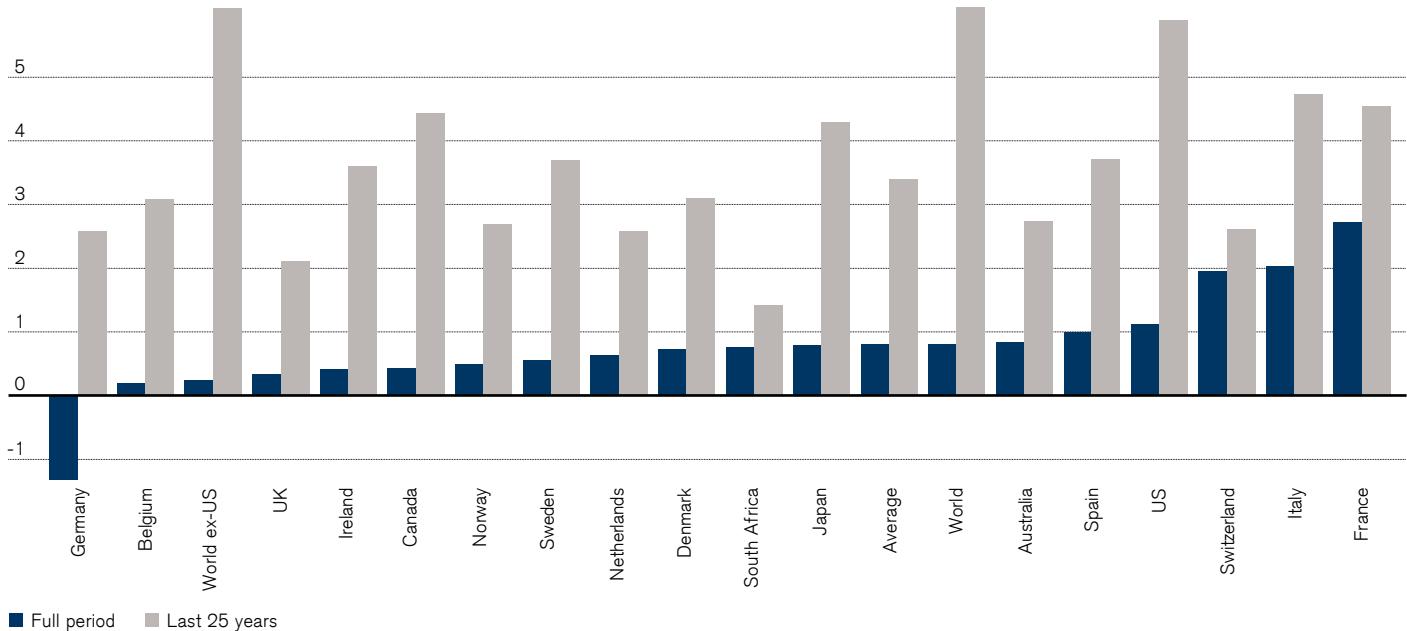
#### Value premium

In addition to the size effect, there has historically been a relationship between the value- or growth-orientation of an investment strategy and its long-run performance. Value stocks sell for relatively low multiples of earnings, book value or dividends. They may be mature businesses with an unexciting future, or they may have a depressed share price that anticipates setbacks. Growth stocks sell for relatively high valuation ratios, reflecting favorable prospects for the business, and their stock price anticipates cash flows that are expected to get larger in the future.

For larger US companies, over the longest available period (end-1926 to end-2008), the difference between the annualized returns on the Fama-French value and growth indexes is 2.5%. In other words, the premium for US value stocks, relative to large companies as a whole, is approximately +1.2%,

**Figure 4****Bond maturity premiums – full period (1900–2008) and last quarter of a century (1984–2008)**

Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009



while the «premium» for growth stocks is of the same magnitude but negative. In the UK, over the longest available period (1900–2008), the difference between the returns on the Dimson-Marsh-Staunton value and growth indexes is 3.1%. In other words, the premium for UK value stocks, relative to large companies as a whole, is approximately +1.5%, while the «premium» for growth stocks is again of the same magnitude but negative. There is evidence in both countries that the value premium is more substantial among small than among large companies.

To estimate the long-run expected return for portfolios tilted towards value, there should therefore be an incremental premium (and a discount for portfolios that emphasize growth stocks).

In Figure 3 we show the long-term performance in the USA of small and large stocks and of value and growth stocks. The Sourcebook includes a similar graph for the UK, as well as evidence over shorter periods for other countries. Over the longest available periods, the annualized size premium has been in the range of 1%–1.5%, and the annualized value premium (among larger stocks) has similarly been around 1%–1.5%.

Small-cap indexes are rebalanced regularly to screen out large companies, while value indexes are rebalanced to ensure there are no growth stock constituents. Whereas the size and style portfolios depicted in Figure 3 are comparatively extreme, most funds contain a mix of constituents, with no more than a partial style tilt. With a 50% tilt, the magnitude for the size or value premium, measured relative to the overall market, is approximately 0.5%–0.75% per year.

To estimate a long-run expected return, we would start with the basic equity premium of 3.5%. For a portfolio with a beta of one, neutral on size but tilted towards value stocks, we would add a value premium of 0.5%. The total premium of 4%

needs to be added to the risk-free interest rate. Supposing the long-term risk-free real rate is 1%, the annualized (geometric mean) expected return would be 5% in real terms.<sup>1</sup>

**Fixed income**

Inflation has seriously impacted investment performance over the last 109 years. Reductions in purchasing power caused the real capital appreciation of the stock market to be negative in nine Yearbook countries, and even Switzerland achieved an annualized real capital gain on equities of below 1%. Nearly one-third of countries had negative real bond returns, and two-thirds had real returns below 2% per year. Over the long investment horizon envisaged here of up to 30 years, most investors should be concerned with the purchasing power of their future wealth.

Investors should therefore formulate investment strategies in real terms. Perhaps surprisingly, this also makes it easier to position conventional bonds strategically in the portfolio. Whereas a 30-year zero coupon bond is nominally riskless over 30 years, in real terms the long conventional bond is just one more risky security. It is, of course, a challenge to optimize fixed-income positions within a multi-asset portfolio, but the task is eased if investors look at risk and return in real terms.

**Bonds and cash**

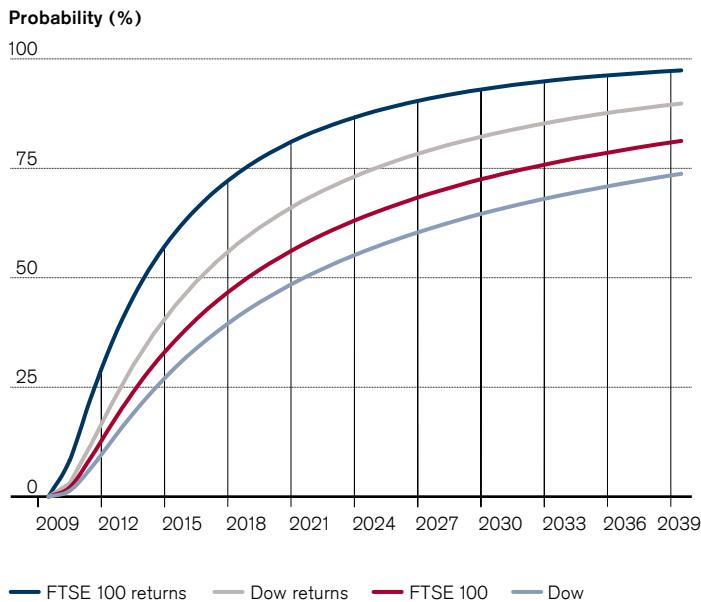
Over the last quarter-century, bond returns have been remarkably high, but extrapolating this level of performance into the future would be fantasy. For government bonds, there is a simpler and better alternative: to rely on the market consensus, as revealed in current bond yields.

<sup>1</sup> For some purposes, the arithmetic mean return is required. The arithmetic mean exceeds the geometric mean by approximately half the variance of returns. Based on a 17% standard deviation, the variance of returns is  $0.17^2$ , half of which is  $0.015 = 1.5\%$ . Adding 1.5% to the geometric mean gives an arithmetic mean expected return of approximately 6.5% real.

**Figure 5**

### Cumulative probability of regaining index highs (as at 23 January 2009)

Source: Elroy Dimson, Paul Marsh and Mike Staunton



Much of the performance of fixed income portfolios can be attributed to two variables: a credit factor that describes the premium generated by potential default risk, relative to risk-free bonds, and a maturity factor that describes the incremental return from investing at the long end of the maturity spectrum. The maturity premium – the geometric difference between returns on long bonds and Treasury bills – is the compensation for bond duration. It remunerates investors for the volatility of long-bond returns and inflation risk, and also reflects more transient factors like liability-driven demand and flights to quality.

Figure 4 shows that, over the last 109 years, the bond maturity premium has been positive in every country except Germany (the premium for Germany excludes 1922–23). Across these 17 countries, the average maturity premium is 0.8%, while the maturity premium on the World index (in USD) is also 0.8% per year. During the first half of the 20th century, the average maturity premium was only 0.3%, while the average over the period 1950–2008 was 1.2%. Bond returns were more volatile in the post-1950 period than before (see the Sourcebook), and this feature can be expected to persist; but on the other hand, inflation risk has declined. For major markets, where there is no risk of government default, we therefore estimate a forward-looking maturity premium of approaching 1% per year.

The return on Treasury bills was low in real terms from 1900 to the end of the 1970s, with averages for the USA of 0.6% and for the UK of 0.1%. Real interest rates from 1980 to 2008 were appreciably higher: 2.1% and 3.8% for the USA and UK, respectively. In a world in which nominal interest rates are low but inflation is negative, short-term real rates could rise further.

However, we do not know what short-term rates will be in the future. Over a long forecasting horizon, we therefore make inferences from contemporary long-term yields, in conjunction with the projected maturity premium. We estimate that the return on cash will average approximately 1% below the yield on long bonds.

#### Inflation-linked bonds, inflation, currencies and credit

For long-run inflation-indexed bonds, it would be misleading to extrapolate historical real returns as a forward-looking expectation. Projections should be based on current yields as the measure of expected long-run real interest rates.

There can be dilemmas in making inferences from inflation-linked bond yields. At times, rates may look extreme, suggesting potential gains from mean reversion (in late 2008, a UK college swapped into a 40-year short position in inflation-linked bonds). At other times, there can be apparent cross-country arbitrage opportunities (in the mid-2000s, some Nordic banks favored Icelandic inflation-linked bonds, the yield of which was at least 2% higher than comparable issuers). For the purpose of making long-run predictions, we attribute these apparent anomalies to features like tax differences or default risk, which cannot readily be arbitrated away.

As well as estimating the return from inflation-indexed bonds, we also need to forecast inflation. There is evidence that expert surveys provide the best short-run inflation forecasts. However, this is not a practical approach for forecasting

long-run inflation, so we infer long-run expected inflation rates from pricing and yield differences between conventional and inflation-linked bonds of similar duration.

The simplistic breakeven inflation rate computed from yield differences has potential drawbacks as a prediction. It usually ignores duration differences, inflation risk premiums, differing tax liabilities, varying levels of liquidity, untrustworthy inflation indexes, and issuer credit risk. However, it is simple, and can in principle be extended to incorporate modern models of the term structure of interest rates.

We show in the Sourcebook that long-run exchange-rate changes have historically been determined largely by inflation differentials. That is, currencies over the long run broadly follow purchasing power parity, and exchange rates may be projected on a basis that reflects long-run relative inflation. This is consistent with long-term equilibrium, and rules out easy arbitrage profits. Shorter-term views can form part of the active portfolio management process.

As part of its capital market assumptions process, Credit Suisse identifies eight categories of corporate, emerging-market and municipal bonds, all of which are subject to variation in credit spreads or risk premiums. The credit risk of a bond refers to the probability of, and potential loss arising from, a credit event such as defaulting on scheduled payments, filing for bankruptcy, restructuring, or a change in credit rating. Over the long term, one would expect exposure to default risk to be rewarded with a premium that fully captures the expected return difference between bonds with potential default risk and risk-free bonds. Currently, credit spreads are very large even on high grade corporate bonds. However, from 1900 to 2008, long-term high grade US corporate bonds gave an annualized premium of just 0.53% relative to government bonds of the same maturity, reflecting the relatively low default rates over time.

Credit Suisse also highlights five groups of alternative assets: structured products, private equity, hedge funds, commodities, and real estate. There are no satisfactory long-run return indexes for alternatives, and this is an area of continuing research.

## **The future**

In addition to asset allocation, long-run forward looking return estimates have many other applications. We conclude by illustrating how they can be used to address a current dilemma. A question for many investors is when the stock market can be expected to recover. The Dow hit an all-time high of 14,164 on 9 October 2007, so with a closing value on 23 January 2009 of 8,078, how long will it be before the Dow regains its high?

If we look at past bear markets, history provides some solace. After the 1987 crash, global investors recouped their losses in two years. During the 1973–74 bear market, when the UK was the worst hit market with a fall of 73% in real terms, the All Share index regained its previous high in less than three years. However, after adjusting for inflation, it took investors over eight years to recoup their losses. Other bear markets have had even longer recovery times. US stocks took until 1949 to rise decisively above their 1929 pre-crash high in real, total return terms. And since their 1989 high, Japanese stocks have fallen 67% in real terms in a seemingly

endless bear market, so their recovery time will span multiple decades.

The best guide to the likely speed of recovery is given by the estimated equity premium of 3.5% above cash. Figure 5 plots the cumulative probability of regaining the index high by various dates in the future. The Dow (the light blue curve) has a 50% chance of breaking through its all time high by 2022, and a 50% chance that the breakthrough will come later.

Of course, investors also receive dividends on their Dow portfolio. While the frequently cited versions of all well-known indexes are capital gains only, almost all indexes now have an accompanying total returns version that includes dividends. The total returns version of the Dow (the grey line) has a 50% chance of regaining its all-time high by 2017.

Figure 5 also shows the likely time for the UK's FTSE100 index to regain its all-time high from the last day of 1999 of 6,930. The headline, capital gains version of the FTSE100 index (the red line) has a 50% chance of regaining its high by 2019, while the corresponding date for the total returns version of the FTSE100 (the dark blue line) is 2014.

These estimates are simply probabilities. We may be lucky: there may be a speedy rebound, and recovery may be faster than is portrayed in the chart. But there could also be a lengthy Japan-style era, in which markets do not recover for a long time.

As this example illustrates, we can gain new insights from asset-class return projections. Wherever possible, we use contemporary market rates to underpin expected returns. We combine these rates with risk premiums derived from historical evidence. Expected returns are therefore built up from a series of premiums relative to factors such as the real rate of interest (for equities) or bond yields (for fixed income). Similarly, we estimate premiums relative to equities as a whole for different segments of the stock market, such as smaller companies or value stocks.

The resulting estimates of long-run asset returns may be used to construct policy portfolios, and to judge the risk/return tradeoffs faced by investors. In an era of volatile markets and challenges to capital preservation, it is clear that portfolio construction is a crucial task for investors. Forward-looking investment plans can benefit from a deep knowledge of historical asset class returns.



# Possible Futures

Looking at very long-run data on economic and investment performance puts the present in perspective and helps us form views on possible futures. At Credit Suisse, the Global Strategy department in London started to gather information stretching back to the 19th century and beyond – principally for the USA and the UK – in the early 1990s. Since then, public interest in longer-term trends has progressively escalated and no one has done more than Drs. Dimson, Marsh and Staunton to extend and publicize our knowledge of financial history. In the current crisis that is more valuable than ever.

**Jonathan Wilmot**, Chief Global Strategist, Credit Suisse Investment Banking

The value and fascination is not of course that history repeats itself exactly. It is far too complex and non-linear a process for that. But human nature is another matter: it is seemingly inevitable that we oscillate – on a smaller or larger scale – from excessive optimism to excessive pessimism in response to periods of unusually good or bad economic performance. And back again. Which is what imparts a shared DNA to otherwise different economic cycles and financial crises: they are like siblings or cousins, where a largely common pool of genes is mixed differently, sometimes producing an easily recognizable family resemblance, sometimes not.

We have argued for many years that deregulation, technology and globalization have made the world economy more structurally like the late 19th century and early 20th century than the more familiar period between World War II and 1982. It's as if some long dormant genes had suddenly found the conditions to become active again. In our view, between the revolutions of 1848 and World War II – and indeed even before that – the basic process was one of investment-led growth responding to some fundamental new opportunity, in many cases related to the spread of railroads and the opening up of new markets or sources of supply.

Each boom was accompanied, sooner or later, by a bubble of some sort (land, equities, emerging bonds) and a speculative phase of excess leverage and credit availability. Huge international capital flows – most obviously from lower interest

rate countries with excess savings – would flow towards these new investment opportunities and contribute to the easy credit conditions and asset price overshooting.

Inevitably, some seemingly minor event would prick the bubble, leading to a financial crisis that saw demand contract abruptly, usually leaving an excess of new capacity and a shortage of business and financial confidence in its wake. During these episodes, internationally mobile savings would flow back to the safety of the home market, putting strain on the gold standard system of fixed exchange rates, and adding to the deflationary pressure on asset prices. In nearly every single case, the crisis was or became global, rather than largely confined to one country.

In fact, major crises of international capitalism occurred in 1825, 1837, 1847, 1857, 1866, 1873, 1878, 1890, 1893, 1907, and, of course, 1929. Yet despite the periodic upheavals, the late 19th century saw the greatest leap forward in global prosperity the world had experienced up until then: the underlying deflationary bias and propensity to financial crisis was not incompatible with sustained growth and development. On the contrary, these upheavals were the means of "correcting market imperfections" and "eliminating speculative and inefficient projects," eventually clearing the way for new savings and capital to be directed towards the next fundamental opportunity. Periodic instability was the price of dynamic progress. That was even true for what was known for a long time as the Great

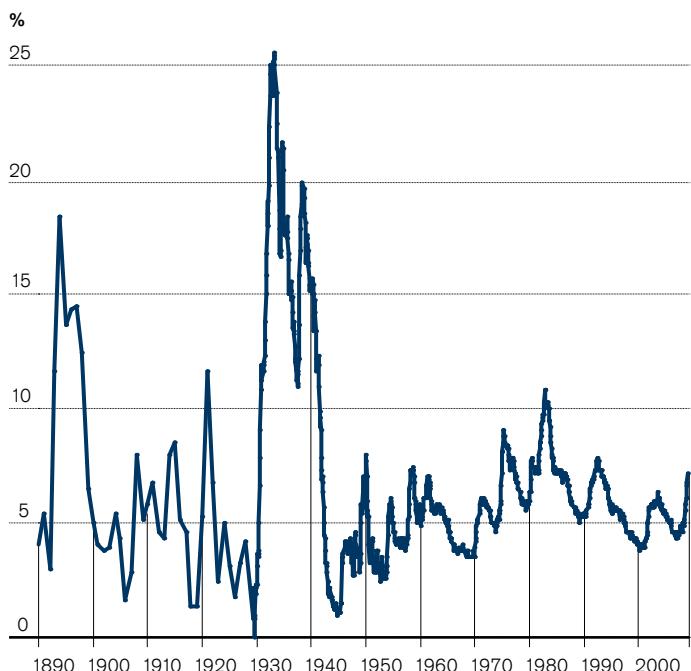
**"That the free enterprise economy is given to recurrent episodes of speculation will be agreed. These – great events and small, involving bank notes, securities, real estate, art and other assets or objects – are, over the years and centuries, part of history..."**

J.K. Galbraith – A Short History of Financial Euphoria

Figure 1

### US unemployment rate from 1890 to 2008

Source: Credit Suisse



Depression of 1892–96. But, especially in the United States, the "Roaring 20s" and the subsequent crash and depression of the 1930s represented a break with the past in terms of the scale, depth and length of wealth destruction, underemployment, economic volatility and human misery. This is one of the things that stands out most clearly from the historic record: there has never been anything like it before or since. And it changed the whole political and social landscape too, arguably contributing to the rise in both communism and fascism, and the instability in Europe that led to World War II. In time, it also led to a new system of regulated corporatism, government intervention, limited capital flows and Keynesian demand management.

And so that Great Depression is now the one we remember, and that we are now desperate to avoid. Indeed, we can be almost certain that a 21st century version of the 1930s would lead to a revolt against the current system of global capitalism and relatively free markets, spark social unrest on a wide scale, and frustrate the ambitions of billions of citizens in the emerging world. Ultimately, peace as well as prosperity would be at risk.

### A tale of two depressions

According to the Columbia Electronic Encyclopedia, 6th ed., a depression in economic terms is a "period of economic crisis in commerce, finance, and industry, characterized by falling prices, restriction of credit, low output and investment, numerous bankruptcies, and a high level of unemployment. ... Recovery is generally slow, the return of business confidence being dependent on the development of new markets, exhaustion of the existing stock of goods, or, in some cases, remedial action by governments."

After the failure of Lehman Brothers in September 2008, global equity markets and economic activity dropped almost vertically, an experience without real precedent since World War II, but typical of 19th century panics. At their November 2008 low, all major equity markets, developed and emerging, had fallen 45%–75% from their peaks, with roughly two thirds of the damage done in just two months – from mid-September to mid-November. This was a crash added on top of a standard bear market.

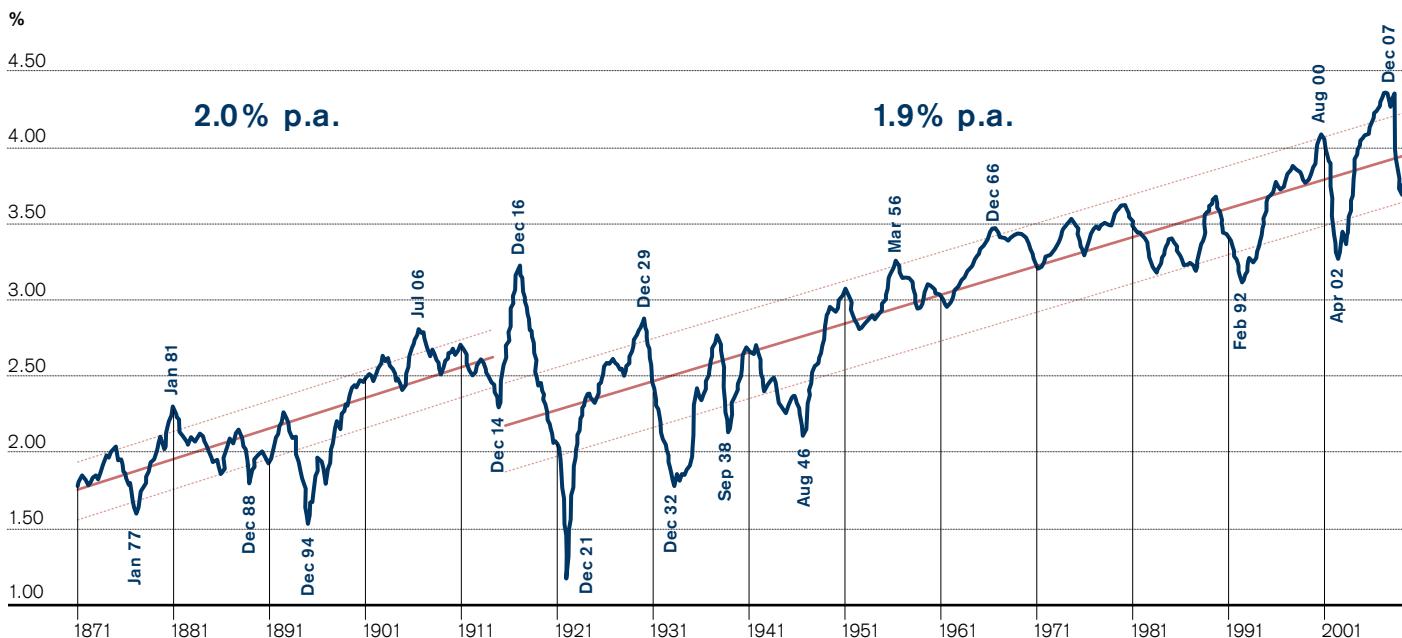
The real economy crashed too. In the last quarter of 2008, developed market GDP fell at a 6% annualized rate, the worst performance since the first oil shock. And, after a five-year boom unmatched since the 1960s, global industrial production fell by nearly 10% in the six months to January 2009, again with most of the damage done in October and November. Spare production capacity soared in this period to a level nearly twice as high as in 1982 and 2001. Behaviorally and psychologically, therefore, the current crisis already felt like a depression by early 2009, with "falling prices, restriction of credit, low output and investment, numerous bankruptcies" and sharply rising unemployment.

Figure 1 suggests a less emotional interpretation, however. In the early 1890s, unemployment reached 17%, and took roughly eight years to return to a "normal" level. In the 1930s, it peaked at 25% and did not return to "normal" until World War II. Unemployment in some of the biggest US cities was also said to have reached 25%–30% during the long slump of the 1870s. By contrast, in the "great recessions" just after

Figure 2

**US real EPS (log levels)**

Source: Credit Suisse



World War I and the second oil shock, unemployment peaked at around 10%–12%. Persistent unemployment above 10%–12% might therefore count as the real mark of a depression.

So talk of another “Great Depression” looks premature to say the least, even if most economists expect unemployment to rise well above 8% in the USA and 10% in the Eurozone in this downturn. More accurate to say, perhaps that the panic of 2008 marks the end of the so-called “Great Moderation,” the term that had come to be used for the last 20 years or so, when shallow recessions and smoother growth became the expected norm. And that the unprecedented policy measures taken after the Lehman crash reflect a common perception that this is first time in 80 years that a genuine threat of pernicious debt deflation has been present.

Time will tell whether the policy response has been too much, too little or about right, but it is driven in large part by the desire to avoid a repeat of Japan’s “lost decade” and informed by the US experience of the 1930s.

Just how destructive – and how exceptional – that experience was is clear from several other metrics. Industrial output fell by 54% from peak to trough between August 1929 and January 1933 compared to “just” 16% in around 18 months in the early 1890s. One point easily forgotten is that there were three distinct phases of declining output in the 1930s. The first phase lasted about 6 months, during which industrial production fell about 12%, only slightly worse than in the current episode. After a brief stabilization, output dropped a further 20% between mid-1930 and the spring of 1931. This was the period when banks started to fail in large numbers, the money supply started shrinking and protectionism spread like wildfire around the globe after the passage of the Smoot/Hawley Tariff Act. Even at this point – when output was around 30% below its peak – the 1930s was not unique. For example,

industrial output fell as much after both World War I and World War II, and in 1937–38.

There was a small rebound in output in the summer of 1931, but, in the autumn, the UK left the gold standard and raised interest rates, attracting large gold inflows from other countries. The Federal Reserve responded by raising interest rates themselves, and the final dreadful decline in output and stock prices began. In the following 12–15 months, US production plunged over 35%, and stock prices fell by 72% as still more severe bank runs occurred and confidence evaporated almost completely. It is this third and final phase of the depression that truly marks it as different from any episode before or since.

It is of some interest to note which components of real GDP fell the most. The estimates are only annual averages, but point to an 18% decline in personal consumption between the peak in 1929 and the trough in 1933, with a recovery to some 4½% above the 1929 level by 1937. Both gross business investment and total construction spending were at peak levels for the cycle in 1926, declining slightly thereafter, but by 1933 they had fallen to negligible levels, down 98% and 82%, respectively, from their peaks. Even in 1937, business investment was still 15% lower than in 1926, with construction expenditure over 50% below peak. Overall real GDP is estimated to have fallen by just under 30% between 1929 and 1933, and was just over 4% above peak by 1937.

Deflation in the 1930s was also severe. The consumer price level dropped by just over 25% in 3½ years, compared to around 5% over five years in the 1890s. Wholesale prices plunged by around a third between 1929 and 1932. Nominal GDP fell by 47% over the course of the depression and, even by the time war broke out in Europe, was still 10% below its 1929 level.

## On sudden changes in the channels of trade

"The commencement of war after a long peace, or of peace after a long war, generally produces considerable distress in trade. It changes in a great degree the nature of the employments to which the respective capitals of countries were before devoted; and during the interval while they are settling in the situations which new circumstances have made the most beneficial, much fixed capital is unemployed, perhaps wholly lost, and labourers are without full employment." Ricardo – On the Principles of Political Economy and Taxation – Chapter 19 (1821).

Looking at real earnings per share (using the Shiller data) provides a different and perhaps surprising perspective. Here it is not the 1930s that are the standout exception, but rather World War I, so much so that earnings never recovered to their late 19th century trend, but simply resumed an almost identical growth rate (of about 2% per year) from a lower level.

On our interpretation of the data, therefore, World War I is remarkable in two entirely opposite respects: it recorded the largest overshoot of real earnings per share relative to trend (in 1916), a level not subsequently exceeded until the 1960s! Meanwhile, in the deflationary aftermath, the largest undershoot occurred (1920–21), when real EPS fell below the level of 50 years earlier and the original trend was never restored. And it seems as though the trend growth rate in real EPS has been roughly in line with the very long-run growth rate of productivity, which has been around 2% per year.

As to oscillations around the trend, it seems that the biggest declines in both real output and profits come after major wars or in depressions "during the interval while (capital is) settling in the situations which new circumstances have made the most beneficial" and the excessive enthusiasms of the last boom are being worked off.

**"Nor is the question before us whether the market is a force for good or ill. Its power to generate wealth and expand freedom is unmatched, but this crisis has reminded us that without a watchful eye, the market can spin out of control – and that a nation cannot prosper long when it favors only the prosperous."**

President Barack Obama: Inaugural Address

The other striking feature of Figure 2 is that the "Great Moderation" in nominal and real GDP growth of the past 25 years or so is not at all visible in the data. In fact, even in the early 1990s and early 2000s, real EPS troughed about 40% below trend, and exhibited cyclical volatility rather similar to the 19th century and the inter-war period. In the 1930s, real EPS fell 65% and troughed about 50% below trend, while real EPS declined by 51% in the 1890s episode, (and also troughed about 50% below trend). We estimate that real earnings were nearly 48% below peak, and 38% below trend by the end of 2008, with by far the biggest decline coming in financial sector profits. Thus, in terms of aggregate earnings volatility, it is actually the 1950s and 1960s that qualify as the "Great Moderation" and which stand out as the exception to the rule.

There would seem to be only two possible explanations. Either firms today have far more operational gearing to the real economy, so that smaller changes in capacity utilization have a larger impact on profits. Or the corporate sector – financial and non-financial – uses less share capital per unit of earnings, i.e. firms have taken advantage of a more stable economy to increase leverage, substituting debt for equity in the capital structure, and preserving, as it were, the level of risk in the system as a whole.

That increased leverage is a likely and perhaps inevitable response to lower volatility – that stability breeds instability – is amply demonstrated by the behavior of financial firms in the build-up to the current crisis. Equally, the scale of this crisis and the sudden shift in the perceived stability of the economy it has already brought about will almost certainly change household, corporate and financial sector attitudes to leverage even without regulatory intervention. In the short to medium run, this cannot be achieved without a corresponding increase in public sector debt, and greatly increased risks to economic stability. But it would not be surprising if the most enduring legacy of the current crisis was a change in the balance between debt and equity on private sector balance sheets, a long-term trend towards lower leverage and perhaps eventually rather lower volatility of earnings around trend.

In the meantime, we can expect two already emerging trends to go a lot further. First, in both the financial and non-financial sectors, increased issuance of new equity capital when market conditions permit is likely, while stock buybacks are likely to diminish and debt buybacks are likely to become more common. At the same time, increased consolidation and industry concentration has in the past always been a feature of depressions or periods with a substantial overhang of excess capacity. Large firms with strong balance sheets, resilient cash flows, the ability to finance growth internally and/or continued access to credit markets are the potential winners in this process. As long ago as the 1870s, the depressed state of the economy and credit markets allowed people like Carnegie and Rockefeller to buy many smaller firms and competitors at fire sale prices, and build vast new business empires.

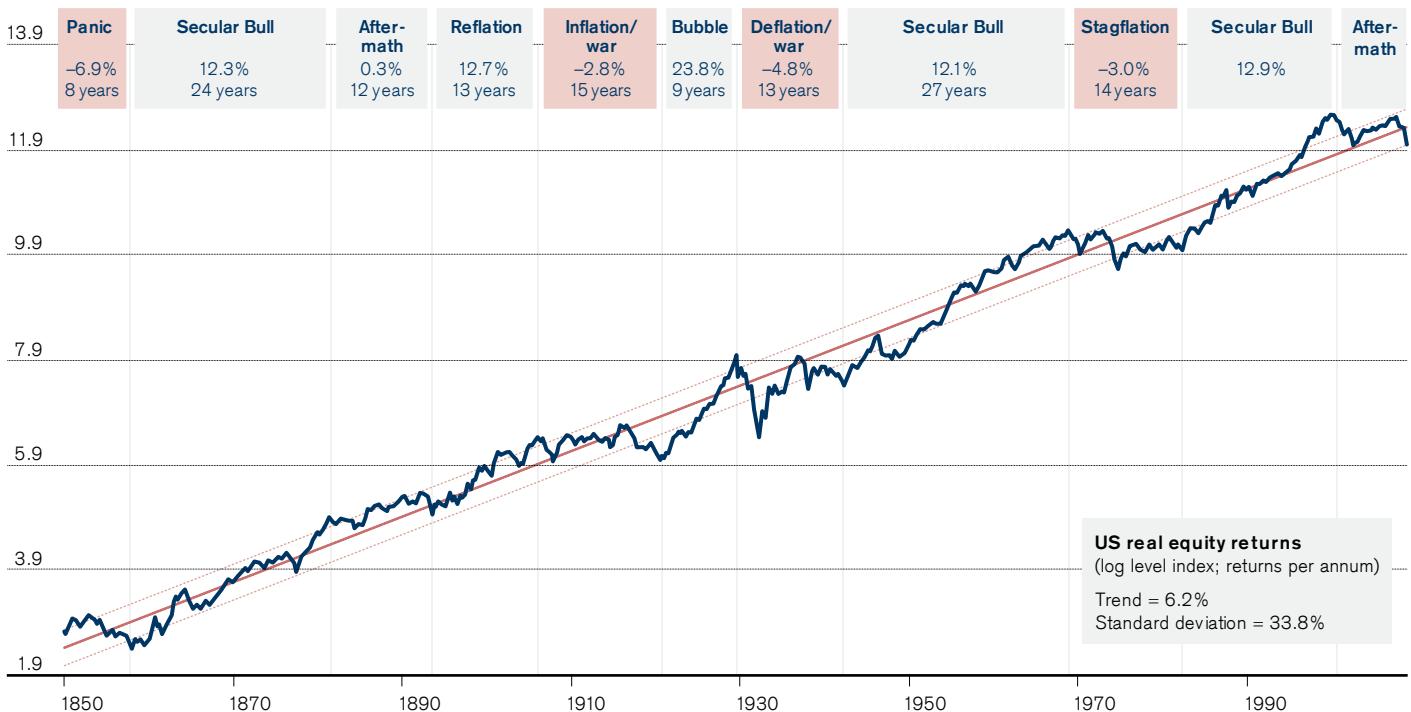
### Credit and capital

Depressions – and especially their cost in terms of unemployment and human misery – are probably the single most objectionable aspect of capitalism, as Keynes and many others recognized even before the 1930s disaster. Our social and

Figure 3

## US real equity returns

Source: Credit Suisse



political fabric will not easily withstand the wrenching adjustments that so often punctuated the dynamic progress of laissez-faire capitalism in the 19th century. (Financial) regulation, the lender of last resort function of modern central banks, unemployment insurance, income redistribution and activist fiscal policy are some of the ways in which we have tried to limit the human cost of the best system for sustained wealth creation yet devised.

Yet it is also impressive to note how resilient capitalism has been over at least 150 years of periodic upheaval. The best data series we have for very long equity market performance is, not surprisingly, for the USA. And looking at inflation-adjusted total returns (dividends plus capital gains) since the mid-19th century shows something quite remarkable: namely that the very long-run trend of real equity returns is apparently around 6% to 6½ % per year, and that this tendency has so far survived the most terrible of historic events, including world wars, depressions and social upheaval.

It is equally clear, however, that the scale of overshooting either side of this remarkably consistent trend is very large. One standard deviation in this chart is 34% in logs, meaning that when the market is two standard deviations above trend – as it was at the height of the tech bubble – it is some ten years ahead of itself. At the beginning of 2009, the US market was around one standard deviation below trend, and in that sense moderately rather than outstandingly cheap.

That is in particularly sharp contrast to June 1932, when the market troughed some 3.4 standard deviations below trend, cheaper by a large margin than any other period. The other major overshoots to the downside (more than two standard deviations below trend) occurred in 1857, when the banking system all but completely collapsed in the aftermath of World War I, shortly after Pearl Harbor, and following the two

oil shocks of the 1970s. Thus one can say that war and/or inflation have been associated with three of the worst equity market overshoots, while a broken credit system following the collapse of a particularly extended or frenetic boom have accounted for the other two.

Conspicuously absent from this list are the great depression of the 1890s, or indeed the 1870s slump. During both of these episodes, the market bottomed around one standard deviation below trend, and in both cases a year or more ahead of the low point in output. Equally relevant perhaps is the observation that, in both 1857 and in the summer of 1931, real equity returns were also around one standard deviation below trend. In both those episodes, it was the final implosion of the banking and credit system that led to the final dramatic overshoot in the equity market itself.

To put it even more simply: the US equity market has only traded at much cheaper levels than it was in late 2008/early 2009 when either the survival of the nation itself, or of its banking system, was under the most serious threat.

This strongly suggests that the key question for investors in 2009 is not “will the recession be long and deep?” (it almost certainly will be), nor whether the relationship between governments and markets is changing (it already is), nor even whether private sector attitudes towards leverage will be profoundly altered by recent events (they surely will be), but rather whether the extraordinary policy measures now underway can gradually stabilize the (global) banking and credit markets, which are themselves arguably already discounting depression.

And yet, for that to happen, governments themselves must remain both credible and creditworthy. If they do, the current crisis – severe as it is – should in the end lay the foundation for a greener global economy and a more sustainable prosperity.



## Guide to the country profiles

# Individual markets

The Credit Suisse Global Investment Returns Yearbook covers 20 countries and regions, all with index series that start in 1900. Figure 1 shows the relative sizes of world equity markets at our base date of end-1899. Figure 2 shows how they had changed by end-2008. Markets that are not included in the Yearbook dataset are colored in black. As these pie charts show, the Yearbook covered more than 88% of the World equity market on both dates.

In the country pages that follow, there are three charts for each country or region. The upper chart reports, for the last 109 years, the real value of an initial investment in equities, long-term government bonds and Treasury bills, all with income reinvested. The middle chart reports the annualized premium achieved by equities relative to bonds and to bills, measured over the last decade, quarter-century, half-century, and full 109 years. The bottom chart compares the 109-year annualized real returns, nominal returns and standard deviation of real returns, for equities, bonds and bills.

The country pages provide data for 17 countries, listed alphabetically starting on the next page, followed by three broad regional groupings. The latter are a 17-country world equity index denominated in USD; an analogous 16-country world ex-US equity index; and an analogous 12-country European equity index. All equity indexes are weighted by market capitalization (or, in years before capitalizations were available, by GDP). We also compute bond indexes for the world, world ex-US and Europe, with countries weighted by GDP.

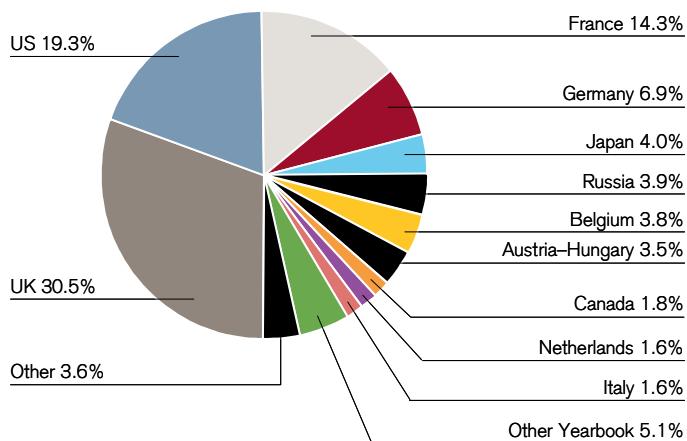
Extensive additional information is available in the [Credit Suisse Global Investment Returns Sourcebook 2009](#). This 200-page reference book is available through London Business School. The underlying data are available through Morningstar Inc.

## The Yearbook's global coverage

The Yearbook contains annual returns on stocks, bonds, bills, inflation and currencies for 17 countries from 1900 to 2008. The countries comprise the US and Canada, seven Euro area markets (Belgium, France, Germany, Ireland, Italy, the Netherlands, Spain), the UK and four other European markets that are outside the Euro (Denmark, Norway, Sweden, Switzerland), two Asia-Pacific markets (Japan, Australia) and one African market (South Africa). In 1900 and in 2009, these countries exceeded 88% of global stock market capitalization.

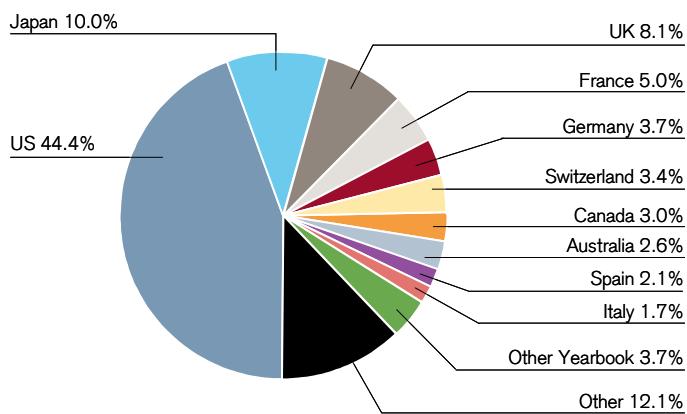
**Figure 1**

### Relative sizes of world stock markets, end-1899



**Figure 2**

### Relative sizes of world stock markets, end-2008



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.

## Bibliography and data sources

1. Dimson, E., P. R. Marsh and M. Staunton, 2002, *Triumph of the Optimists*, NJ: Princeton University Press
2. Dimson, E., P. R. Marsh and M. Staunton, 2008, The worldwide equity premium: a smaller puzzle, R Mehra (Ed.) *The Handbook of the Equity Risk Premium*, Amsterdam: Elsevier
3. Dimson, E., P. R. Marsh and M. Staunton, 2009, *Credit Suisse Global Investment Returns Sourcebook*
4. Dimson, E., P. R. Marsh and M. Staunton, 2009, *The Dimson-Marsh-Staunton Global Investment Returns Database*, Morningstar Inc (the "DMS" data module)



## Australia

# The lucky country

Australia is often described as "the Lucky Country" with reference to its natural resources, prosperity, weather, and distance from problems elsewhere in the world.

This luck has extended to equity investors. Australia has been the best performing equity market over the 109 years since 1900, with a real return of 7.3% per year.

The Australian Securities Exchange (ASX) has its origins in six separate exchanges, established as early as 1861 in Melbourne and 1871 in Sydney, well before the federation of the Australian colonies to form the Commonwealth of Australia in 1901. The ASX is now the world's eighth-largest stock exchange. Its principal sectors are natural resources (27% weighting) and banks (24%), while the largest stocks are BHP Billiton, Westpac and Commonwealth bank of Australia.

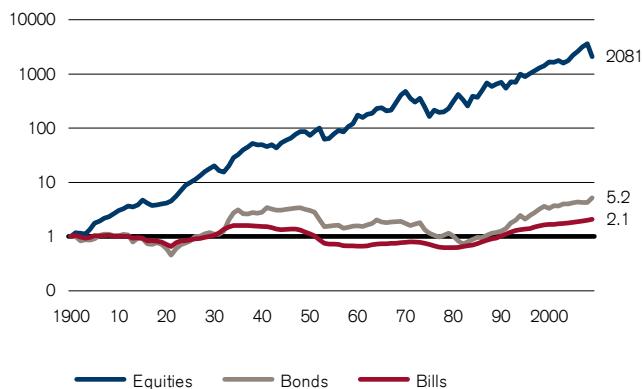
Australia also has a significant government and corporate bond market, and is home to the largest financial futures and options exchange in the Asia-Pacific region. It has the world's ninth-largest forex market and the Australian dollar is the world's seventh most heavily traded currency. Sydney is a major global financial center.

### Capital market returns for Australia

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 2081 as compared to 5.2 for bonds and 2.1 for bills. Figure 2 shows that, since 1900, equities beat bonds by 5.7% and bills by 6.5% per year. Figure 3 shows that the long-term real return on Australian equities was an annualized 7.3% as compared to bonds and bills, which gave a real return of 1.5% and 0.7% respectively. For additional explanations of these figures, see page 25.

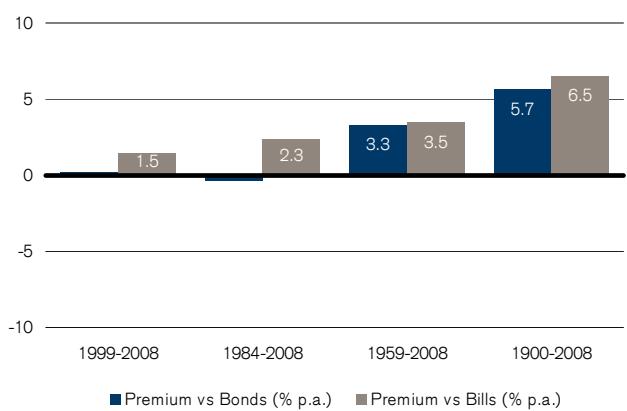
**Figure 1**

#### Annualized performance from 1900 to 2008



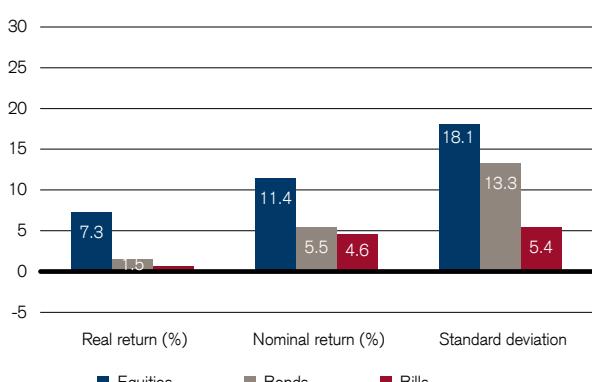
**Figure 2**

#### Equity risk premium over 10 to 109 years



**Figure 3**

#### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Belgium

# At the heart of Europe

Lithuania claims to lie at the geographical heart of Europe, but Belgium can also assert centrality. It lies at the crossroads of Europe's economic backbone and its key transport and trade corridors, and is the headquarters of the European Union.

Belgium's strategic location has been a mixed blessing, making it a major battleground in two world wars. The ravages of war and attendant high inflation rates are an important contributory factor to its poor long-run investment returns – Belgium has been the worst-performing equity market and the fifth worst performing bond market.

The Brussels stock exchange was established in 1801 under French Napoleonic rule. Brussels rapidly grew into a major financial center, specializing during the early 20th century in tramways and urban transport.

Its importance has gradually declined, and Euronext Brussels now ranks 26th among world exchanges by size. It has suffered badly during the recent banking crisis. Three large banks made up over half its market capitalization at start-2008, and these suffered an average decline of 85% during 2008. The three largest stocks at end-2008 were Anheuser-Busch, Belgacom and Groupe Bruxelles Lambert.

## Capital market returns for Belgium

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 7 as compared to 0.9 for bonds and 0.7 for bills. Figure 2 shows that, since 1900, equities beat bonds by 2.0% and bills by 2.2% per year. Figure 3 shows that the long-term real return on Belgian equities was an annualized 1.9% as compared to bonds and bills, which gave a real return of -0.1% and of -0.3% respectively. For additional explanations of these figures, see page 25.

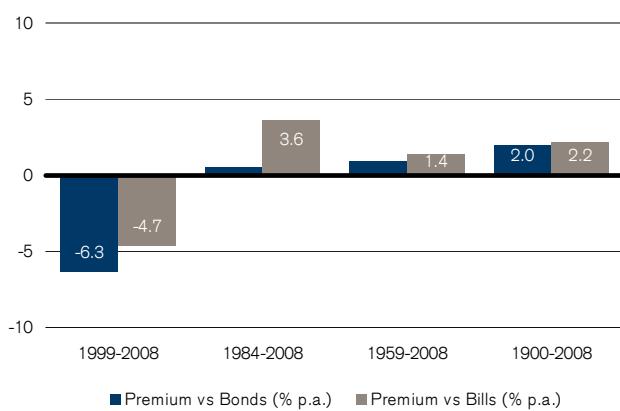
**Figure 1**

### Annualized performance from 1900 to 2008



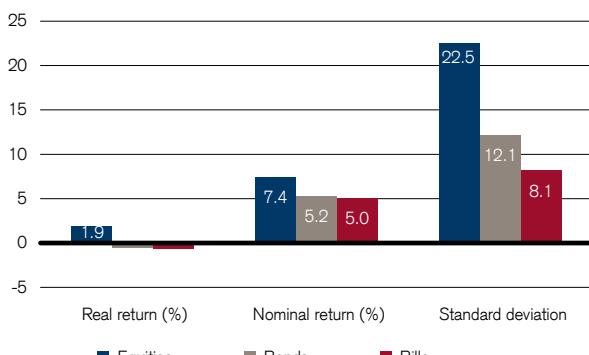
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Canada

# Resourceful country

Canada is the world's second-largest country by land mass (after Russia), and its economy is the eighth-largest. It is blessed with natural resources, having the world's second-largest oil reserves, while its mines are leading producers of nickel, gold, diamonds, uranium and lead. It is also a major exporter of soft commodities, especially grains and wheat, as well as lumber, pulp and paper.

The Canadian equity market dates back to the opening of the Toronto Stock Exchange in 1861 and is the world's seventh-largest, accounting for 3% of world capitalization. Canada also has the world's seventh-largest bond market.

Given Canada's natural endowment, it is no surprise that resource stocks have a 38% weighting in its equity market, while a further 34% is accounted for by financials. The largest stocks are currently Royal Bank of Canada, EnCana Corporation and Barrick Gold.

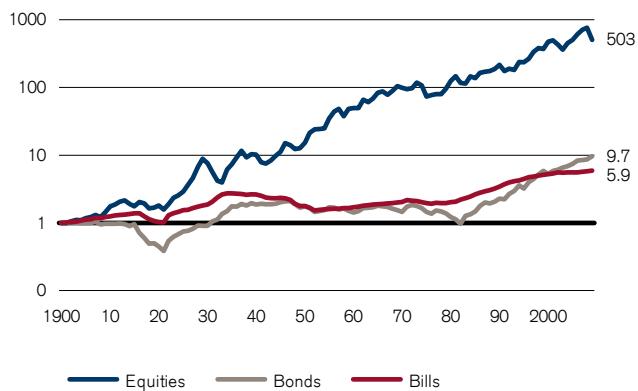
Canadian equities have performed well over the long run, with a real return of 5.9% per year. The real return on bonds has been 2.1% per year. These figures are remarkably close to, but a fraction below, those for the United States.

### Capital market returns for Canada

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 503 as compared to 9.7 for bonds and 5.9 for bills. Figure 2 shows that, since 1900, equities beat bonds by 3.7% and bills by 4.2% per year. Figure 3 shows that the long-term real return on Canadian equities was an annualized 5.9% as compared to bonds and bills, which gave a real return of 2.1% and 1.6% respectively. For additional explanations of these figures, see page 25.

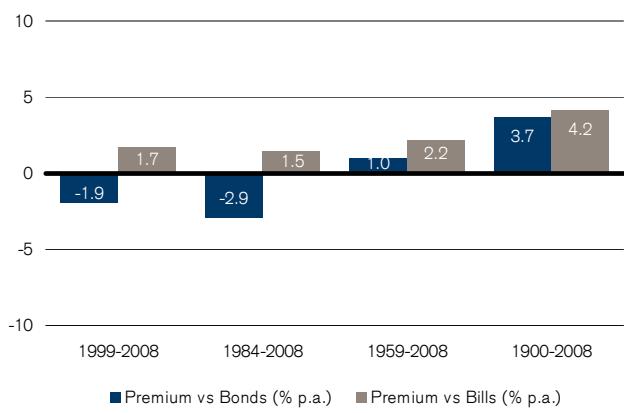
**Figure 1**

#### Annualized performance from 1900 to 2008



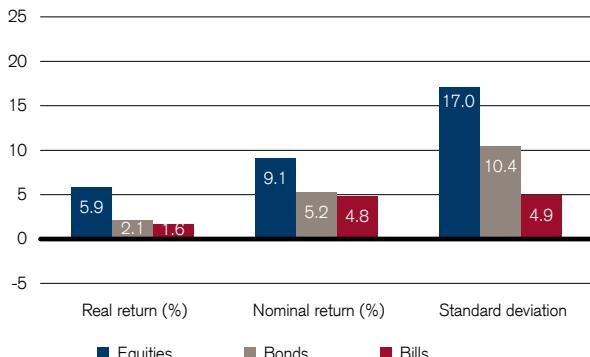
**Figure 2**

#### Equity risk premium over 10 to 109 years



**Figure 3**

#### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Denmark

# Happiest nation

In a recent global survey of citizens' happiness, Denmark was ranked "happiest place on earth," closely followed by Switzerland and Austria, with Zimbabwe, understandably, ranked "least happy."

Whatever the source of Danish happiness, it does not appear to spring from outstanding equity returns. Since 1900, Danish equities have given an annualized real return of 4.6%, which, while respectable, is below the world average of 5.2%.

In contrast, Danish bonds gave an annualized real return of 3.0%, the highest among the Yearbook countries. This is because our Danish bond returns, unlike those for the other 16 countries, include an element of credit risk. The returns are taken from a study by Claus Parum, who felt it was more appropriate to use mortgage bonds, rather than more thinly traded government bonds. The country with the highest returns for truly default-free bonds is Switzerland.

The Copenhagen Stock Exchange was formally established in 1808, but can trace its roots back to the late 17th century. The Danish equity market is relatively small, ranking as the world's 25th largest. It has a high weighting in healthcare (48%) and industrials (33%), and the largest stocks listed in Copenhagen are Novo Nordisk, Vestas Wind Systems and Danske Banking.

### Capital market returns for Denmark

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 138 as compared to 26.4 for bonds and 11.9 for bills. Figure 2 shows that, since 1900, equities beat bonds by 1.5% and bills by 2.3% per year. Figure 3 shows that the long-term real return on Danish equities was an annualized 4.6% as compared to bonds and bills, which gave a real return of 3.0% and 2.3% respectively. For additional explanations of these figures, see page 25.

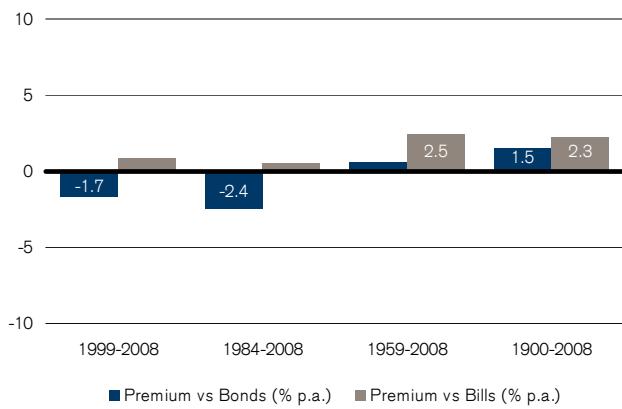
**Figure 1**

### Annualized performance from 1900 to 2008



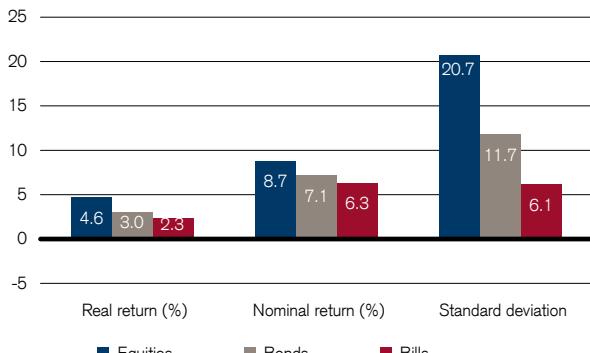
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## France

# European center

Paris and London competed vigorously as financial centers in the 19th century. After the Franco-Prussian War in 1870, London achieved domination. But Paris remained important, especially, to its later disadvantage, in loans to Russia and the Mediterranean region, including the Ottoman Empire. As Kindleberger, the economic historian put it, "London was a world financial center; Paris was a European financial center."

Paris has continued to be an important financial center while France has remained at the center of Europe, being a founder member of the European Union and the euro. France is Europe's second-largest economy and the fifth-largest in the world. It has Europe's second-largest equity market (ranked fourth in the world) and its third-largest bond market (fifth in the world).

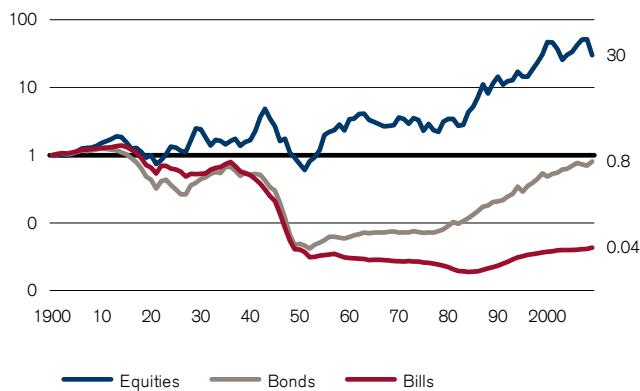
Long-run French asset returns have been disappointing. France ranks 12th out of the 17 Yearbook countries for equity performance, 14th for bonds and 16th for bills. It has had the third-highest inflation, hence the poor fixed income returns. However, the inflationary episodes and poor performance date back to the first half of the 20th century and are linked to the world wars. Since 1950, French equities have achieved mid-ranking returns.

### Capital market returns for France

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 30 as compared to 0.8 for bonds and 0.04 for bills. Figure 2 shows that, since 1900, equities beat bonds by 3.4% and bills by 6.2% per year. Figure 3 shows that the long-term real return on French equities was an annualized 3.2% as compared to bonds and bills, which gave a real return of -0.2% and of -2.8% respectively. For additional explanations of these figures, see page 25.

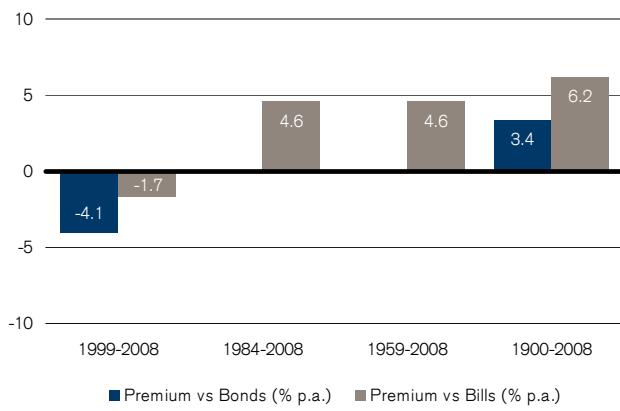
**Figure 1**

### Annualized performance from 1900 to 2008



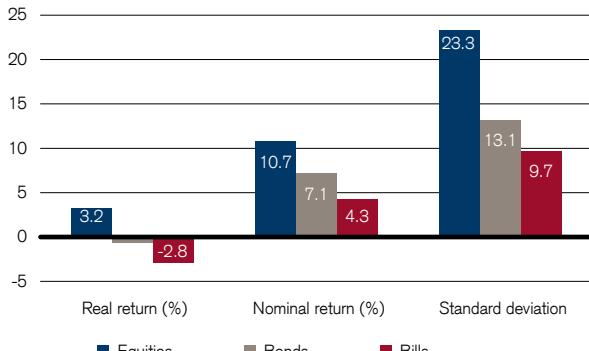
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Germany

# Locomotive of Europe

German capital market history changed radically after World War II. In the first half of the 20th century, German equities lost two-thirds of their value in World War I. In the hyperinflation of 1922–23, inflation hit 209 billion percent, and holders of fixed income securities were wiped out. In World War II and its immediate aftermath, equities fell by 88% in real terms, while bonds fell by 91%.

There was then a remarkable transformation. In the early stages of its “economic miracle,” German equities rose by 4094% in real terms from 1949 to 1959. Germany rapidly became known as the “locomotive of Europe.” Meanwhile, it built a reputation for fiscal and monetary prudence. From 1949 to date, it has enjoyed the world’s lowest inflation rate, its strongest currency (now the euro), and the second-best-performing bond market.

Today, Germany is Europe’s largest economy and the world’s fourth-largest. It remains the world’s top exporter, but with China in hot pursuit. Its stock market, which dates back to 1685, ranks fifth in the world by size, while its bond market is the world’s third-largest.

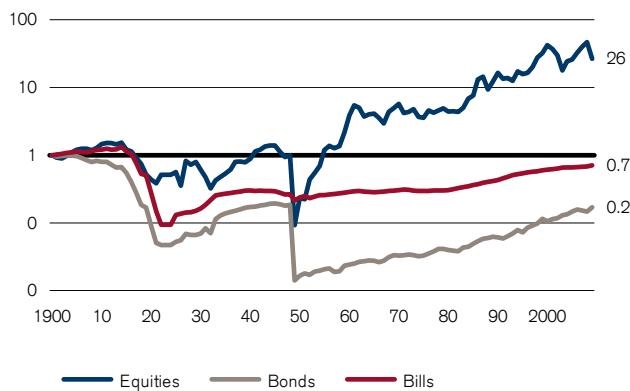
The German stock market retains its bias towards manufacturing, with weightings of 18.6% in consumer goods, 15.6% in industrials, and 15.3% in basic materials. Utilities (15.7%) and insurance (11.5%) are also significant sectors. The largest stocks are E.ON, Siemens, Volkswagen, Deutsche Telekom and Allianz.

### Capital market returns for Germany

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 26 as compared to 0.2 for bonds and 0.7 for bills. Figure 2 shows that, since 1900, equities beat bonds by 4.7% and bills by 3.4% per year. Figure 3 shows that the long-term real return on German equities was an annualized 3%. For presentational reasons, Figures 1 to 3 all omit the hyperinflationary years of 1922–23. For additional explanations of these figures, see page 25.

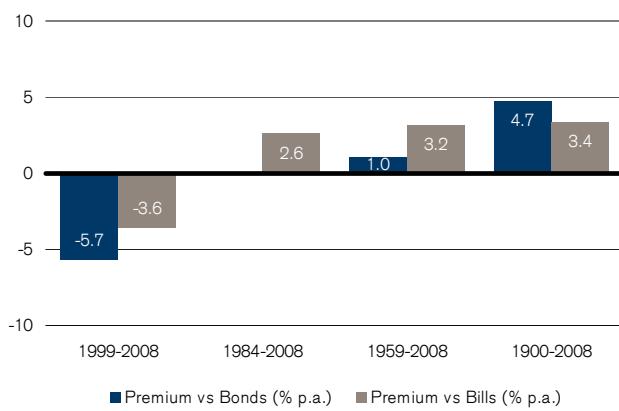
**Figure 1**

### Annualized performance from 1900 to 2008



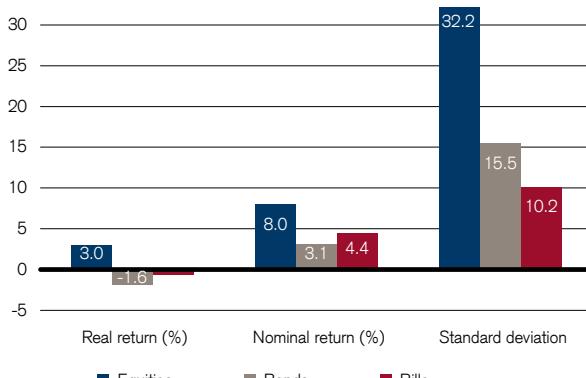
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Ireland

# Celtic Tiger

Ireland gained its independence from the United Kingdom in 1922. However, stock exchanges had existed in Dublin and Cork since 1793, so in order to monitor Irish stocks from 1900 (22 years before independence), we constructed an index for Ireland based on stocks traded on these two exchanges.

In the period following independence, neither economic growth, nor equity returns were especially strong. During the 1950s, Ireland experienced large-scale emigration. It joined the European Union in 1973, and from 1987 the economy improved.

The 1990s saw the beginning of unprecedented economic success, and Ireland became known as the Celtic Tiger. By 2007, it had become the world's fifth-richest country in terms of GDP per capita, the second-richest in the EU, and was experiencing net immigration. Over the period 1987–2006, Ireland had the second-highest real equity return of any Yearbook country.

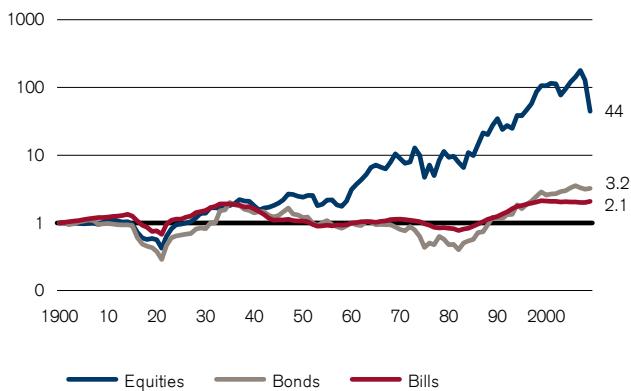
Ireland is one of the smallest markets covered by the Yearbook, and sadly, it has shrunk since 2006. Too much of the market boom was based on real estate, financials and gearing, and Irish stocks fell 75% in real terms in 2007–08. At the end of 2006, the Irish market had a 57% weighting in financials and these fell by 95% during 2007–08. The tiger now has a smaller bite.

## Capital market returns for Ireland

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 44 as compared to 3.2 for bonds and 2.1 for bills. Figure 2 shows that, since 1900, equities beat bonds by 2.4% and bills by 2.9% per year. Figure 3 shows that the long-term real return on Irish equities was an annualized 3.5% as compared to bonds and bills, which gave a real return of 1.1% and 0.7% respectively. For additional explanations of these figures, see page 25.

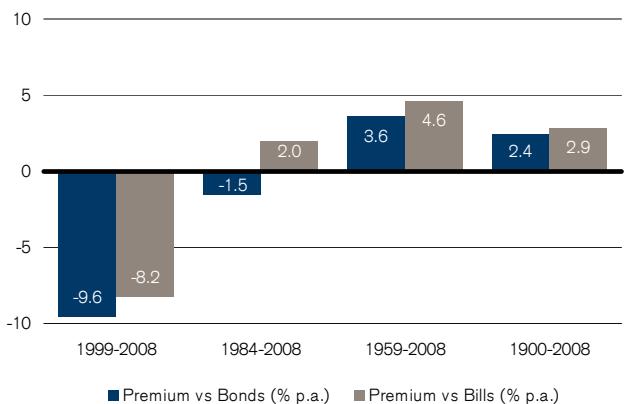
**Figure 1**

### Annualized performance from 1900 to 2008



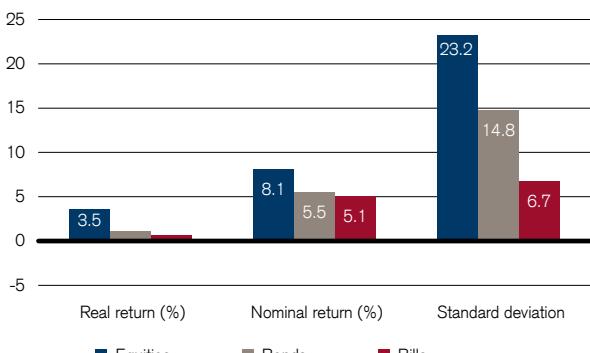
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Italy

# Banking innovators

While banking can trace its roots back to Biblical times, Italy can claim a key role in the early development of modern banking. North Italian bankers, including the Medici, dominated lending and trade financing throughout Europe in the Middle Ages. These bankers were known as Lombards, a name that was then synonymous with Italians. Indeed, banking takes its name from the Italian word "banca," the bench on which the Lombards used to sit to transact their business.

Italy retains a large banking sector to this day, with financials accounting for 44% of the Italian equity market. Oil and gas accounts for a further 22%, and the largest stocks traded on the Milan Stock Exchange are Eni, Generali Assicurazio and Unicredito.

Sadly, Italy has experienced some of the poorest asset returns of any Yearbook country. Since 1900, the annualized real return from equities has been 1.9%, the second-lowest return out of 17 countries. Apart from Germany, with its post-World War I and post-World War II hyperinflations, Italy has experienced the worst real bond and bill returns of any Yearbook country (see Figure 1 opposite), and the highest inflation rate and weakest currency.

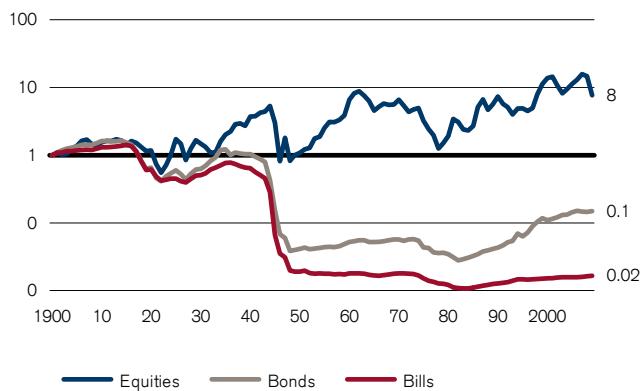
Today, Italy is the world's seventh-largest economy. Its equity market is the world's 11th largest, while its highly developed bond market is the world's fourth-largest.

### Capital market returns for Italy

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 8 as compared to 0.1 for bonds and 0.02 for bills. Figure 2 shows that, since 1900, equities beat bonds by 3.7% and bills by 5.8% per year. Figure 3 shows that the long-term real return on Italian equities was an annualized 1.9% as compared to bonds and bills, which gave a real return of -1.7% and of -3.7% respectively. For additional explanations of these figures, see page 25.

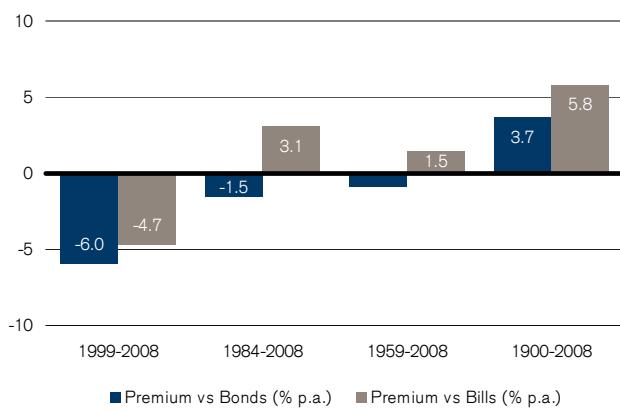
**Figure 1**

#### Annualized performance from 1900 to 2008



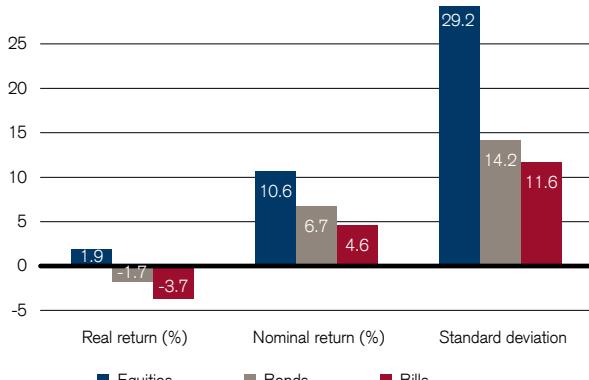
**Figure 2**

#### Equity risk premium over 10 to 109 years



**Figure 3**

#### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Japan

# Birthplace of futures

Japan has a long heritage in financial markets. Trading in rice futures had been initiated around 1730 in Osaka, which created its stock exchange in 1878. Osaka was to become the leading derivatives exchange in Japan (and the world's largest futures market in 1990 and 1991) while the Tokyo stock exchange, also founded in 1878, was to become the leading market for spot trading.

From 1900 to 1939, Japan was the world's second-best equity performer. But World War II was disastrous and Japanese stocks lost 96% of their real value. From 1949 to 1959, Japan's "economic miracle" began and equities gave a real return of 1565%. With one or two setbacks, equities kept rising for another 30 years.

By the start of the 1990s, the Japanese equity market was the largest in the world, with a 40% weighting in the world index versus 32% for the USA. Real estate values were also riding high and it was alleged that the grounds of the Imperial palace in Tokyo were worth more than the entire State of California.

Then the bubble burst. From 1990 to 2008, Japan was the worst-performing stock market, losing two-thirds of its value in real terms. Its weighting in the world index fell from 40% to 10%. Meanwhile, Japan suffered a prolonged period of stagnation, banking crises and deflation. Hopefully, this will not form the blueprint for the rest of the world over the coming decade.

Despite the fallout from the bursting of the asset bubble, Japan remains a major economic power with the world's second-largest GDP. It has the world's second-largest equity market as well as its second-biggest bond market. It is a world leader in technology, automobiles, electronics, machinery and robotics, and this is reflected in the composition of its equity market.

## Capital market returns for Japan

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 58 as compared to 0.3 for bonds and 0.1 for bills. Figure 2 shows that, since 1900, equities beat bonds by 5.0% and bills by 5.9% per year. Figure 3 shows that the long-term real return on Japanese equities was an annualized 3.8% as compared to bonds and bills, which gave a real return of -1.2% and of -2.0% respectively. For additional explanations of these figures, see page 25.

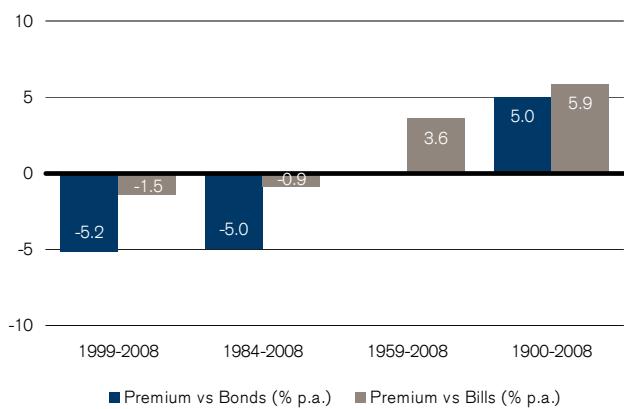
**Figure 1**

### Annualized performance from 1900 to 2008



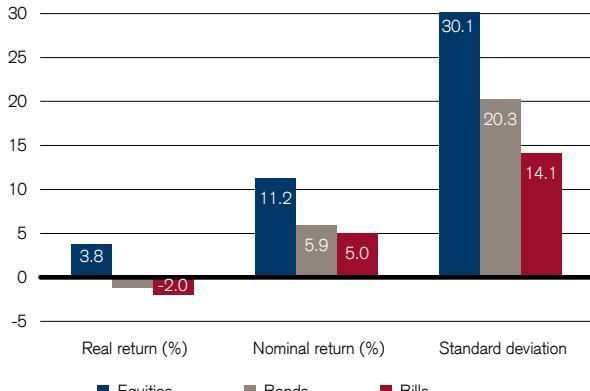
**Figure 2**

### Equity risk premium over 10 to 109 years

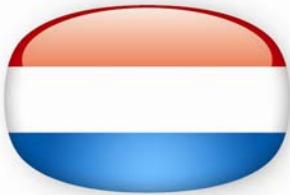


**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Netherlands

# Exchange pioneer

Although some forms of stock trading occurred in Roman times, organized trading did not take place until transferable securities appeared in the 17th century. The Amsterdam market, which started in 1611, was the world's main center of stock trading in the 17th and 18th centuries. A book written in 1688 by a Spaniard living in Amsterdam (appropriately entitled *Confusion de Confusiones*) describes the amazingly diverse tactics used by investors. Even though only one stock was traded – the Dutch East India Company – they had bulls, bears, panics, bubbles and other features of modern exchanges.

The Amsterdam Exchange continues to prosper today as part of Euronext. It is the world's 16th largest equity market, and over the years, Dutch equities have generated a mid-ranking real return of 4.7% per year. The Netherlands also has a significant bond market which is the world's eighth-largest. The Netherlands has traditionally been a low inflation country and, since 1900, has enjoyed the second-lowest inflation rate among the Yearbook countries (after Switzerland).

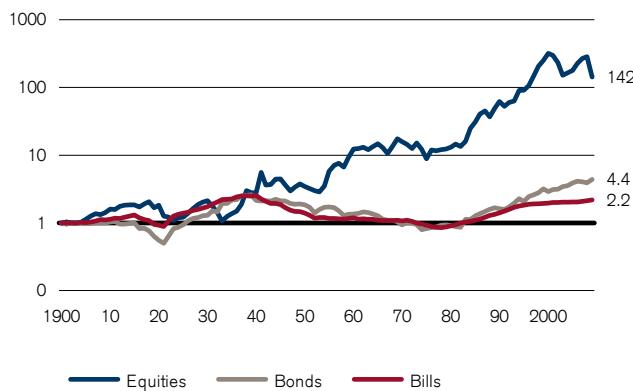
The Netherlands has a prosperous open economy which ranks 16th in the world. For a small country, the Netherlands hosts more than its share of major multinationals, including Unilever, Royal Dutch Shell, Philips, Heineken, TNT, Ahold, Akzo Nobel, DSM, Reed Elsevier and ING Group.

## Capital market returns for the Netherlands

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 142 as compared to 4.4 for bonds and 2.2 for bills. Figure 2 shows that, since 1900, equities beat bonds by 3.2% and bills by 3.9% per year. Figure 3 shows that the long-term real return on Dutch equities was an annualized 4.7% as compared to bonds and bills, which gave a real return of 1.4% and 0.7% respectively. For additional explanations of these figures, see page 25.

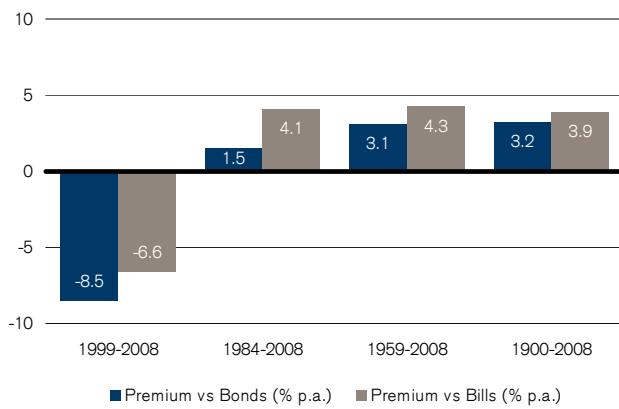
**Figure 1**

### Annualized performance from 1900 to 2008



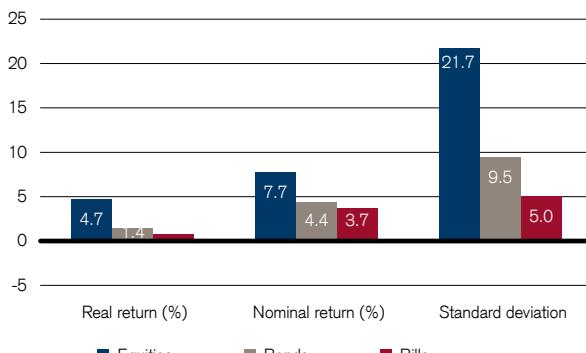
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Norway

# Nordic oil kingdom

Norway is a very small country (ranked 115th by population and 61st by land area) surrounded by large natural resources that make it the world's fourth-largest oil exporter and the second-largest exporter of fish. The population of 4.8 million enjoys the second-largest GDP per capita in the world and lives under a constitutional monarchy outside the Eurozone (a distinction shared with the UK).

The Oslo stock exchange (OSE) was founded as Christiania Bors in 1819 for auctioning ships, commodities and currencies. Later, this extended to trading in stocks and shares. The exchange now forms part of the OMX grouping of Scandinavian exchanges.

In the 1990s, the Government established its petroleum fund to invest the surplus wealth from oil revenues. This has grown to become the largest fund in Europe and the second-largest in the world. The fund invests predominantly in equities, and its asset value is now similar to that of the Oslo stock exchange.

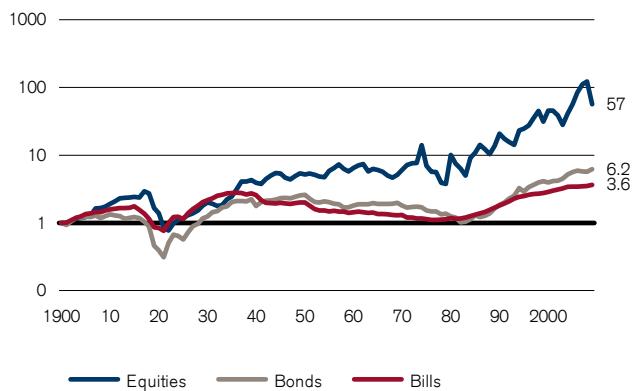
The largest OSE stocks are StatoilHydro, Orkla, Telenor, Yara, and DnB NOR.

### Capital market returns for Norway

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 57 as compared to 6.2 for bonds and 3.6 for bills. Figure 2 shows that, since 1900, equities beat bonds by 2.0% and bills by 2.6% per year. Figure 3 shows that the long-term real return on Norwegian equities was an annualized 3.8% as compared to bonds and bills, which gave a real return of 1.7% and 1.2% respectively. For additional explanations of these figures, see page 25.

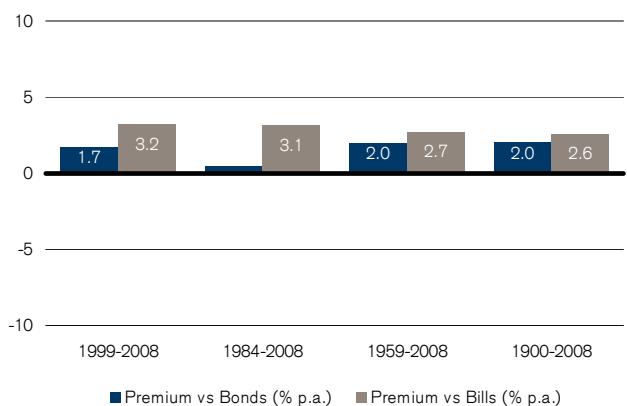
**Figure 1**

#### Annualized performance from 1900 to 2008



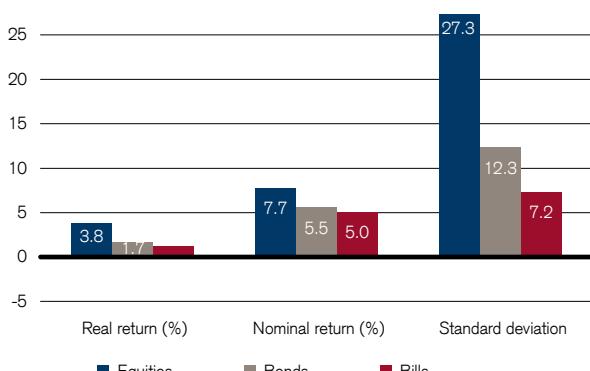
**Figure 2**

#### Equity risk premium over 10 to 109 years



**Figure 3**

#### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## South Africa

# Golden opportunity

The discovery of diamonds at Kimberley in 1870 and the Witwatersrand gold rush of 1886 had a profound impact on South Africa's subsequent history. Today, South Africa has 90% of the world's platinum, 80% of its manganese, 75% of its chrome and 41% of its gold, as well as vital deposits of diamonds, vanadium and coal.

The 1886 gold rush led to many mining and financing companies opening up, and to cater for their needs, the Johannesburg Stock Exchange (JSE) opened in 1887. Over the years since 1900, the South African equity market has been one of the world's most successful, generating real equity returns of 7.1% per year, the third-highest return among the Yearbook countries.

Today, South Africa is the largest economy in Africa, with a sophisticated financial structure and the world's 17th largest equity market. Back in 1900, South Africa, together with several other Yearbook countries, would have been deemed an emerging market. According to index compilers, it has not yet emerged, and it today ranks as the fifth-largest emerging market.

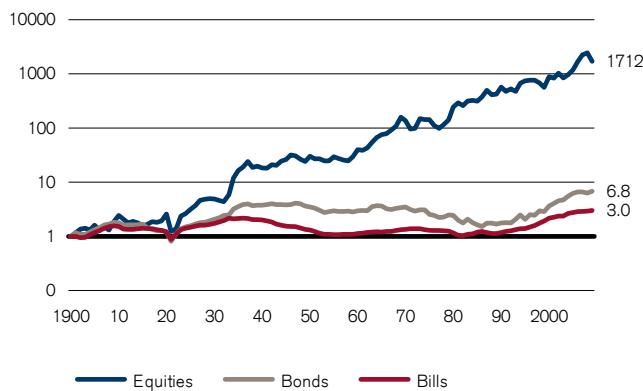
Gold, once the keystone of South Africa's economy, has declined in importance as the economy has diversified. Resource stocks, however, are still a third of the JSE's capitalization. The largest JSE stocks are MTN, Sasol, Standard Bank, Anglogold Ashanti and Impala Platinum.

### Capital market returns for South Africa

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 1712 as compared to 6.8 for bonds and 3.0 for bills. Figure 2 shows that, since 1900, equities beat bonds by 5.2% and bills by 6.0% per year. Figure 3 shows that the long-term real return on South African equities was an annualized 7.1% as compared to bonds and bills, which gave a real return of 1.8% and 1.0% respectively. For additional explanations of these figures, see page 25.

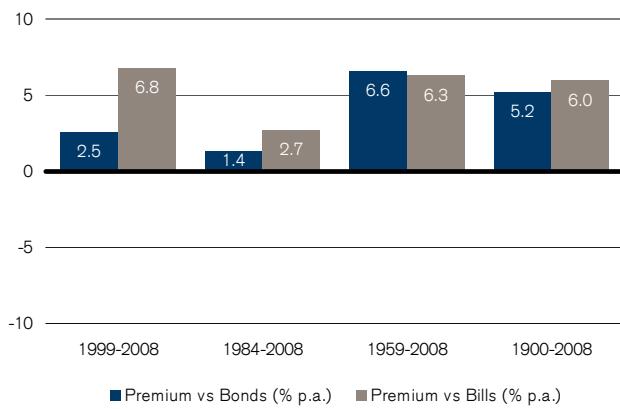
**Figure 1**

#### Annualized performance from 1900 to 2008



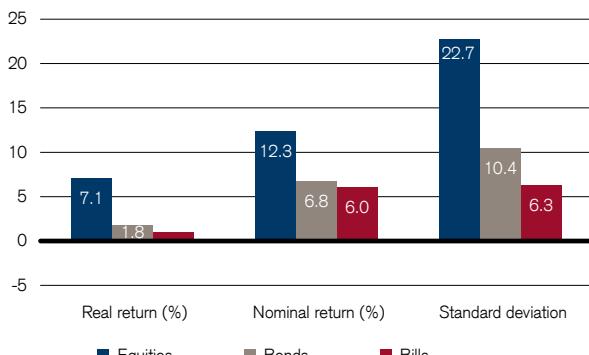
**Figure 2**

#### Equity risk premium over 10 to 109 years



**Figure 3**

#### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Spain

# Key to Latin America

Spanish is the most widely spoken international language after English, and has the fourth largest number of native speakers after Chinese, Hindi and English. Partly for this reason, Spain has a visibility and influence that extends way beyond its Southern European borders, and carries weight throughout Latin America.

The modern style of Spanish bullfighting is described as daring and revolutionary, and that is an apt description of real equity returns over the century. While the 1960s and 1980s saw Spanish real equity returns enjoying a bull market and ranked 2nd in the world, the 1930s and 1970s saw the very worst returns among our countries.

Though Spain stayed on the sidelines during the two world wars, Spanish stocks lost much of their real value over the period of the civil war during 1936–39, while the return to democracy in the 1970s coincided with the quadrupling of oil prices, heightened by Spain's dependence on imports for 70% of its energy needs.

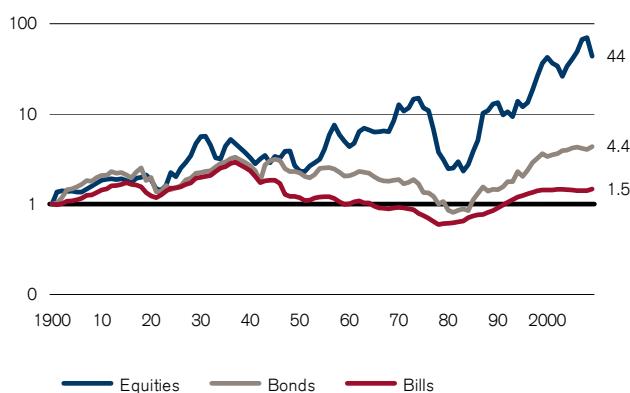
The Madrid Stock Exchange was founded in 1831 and it is now the ninth-largest in the world, helped by the strong economic growth since the 1980s. The major Spanish companies retain strong presences in Latin America combined with increasing strengths in banking and infrastructure across Europe. The largest stocks are Telefonica, Banco Santander, Iberdrola, BBVA and Repsol YPF.

### Capital market returns for Spain

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 44 as compared to 4.4 for bonds and 1.5 for bills. Figure 2 shows that, since 1900, equities beat bonds by 2.1% and bills by 3.2% per year. Figure 3 shows that the long-term real return on Spanish equities was an annualized 3.5% as compared to bonds and bills, which gave a real return of 1.4% and 0.4% respectively. For additional explanations of these figures, see page 25.

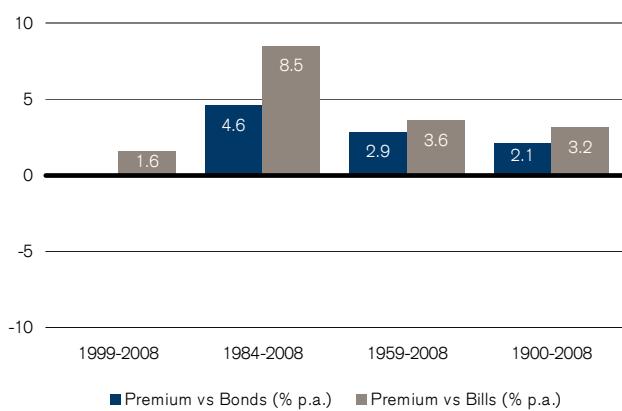
**Figure 1**

#### Annualized performance from 1900 to 2008



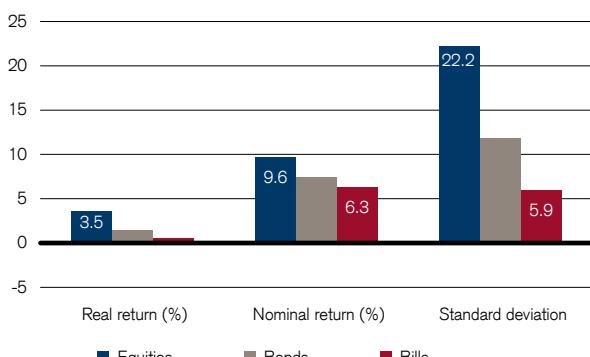
**Figure 2**

#### Equity risk premium over 10 to 109 years



**Figure 3**

#### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Sweden

# Nobel prize returns

Alfred Nobel bequeathed 94% of his total assets to establish and endow the five Nobel Prizes (first awarded in 1901), instructing that the capital be invested in safe securities. Were Sweden to win a Nobel prize for its investment returns, it would be for its achievement as the only country to have real returns for equities, bonds and bills all ranked in the top three.

Real Swedish equity returns led the world in the 1900s through natural resources; in the 1940s through neutrality; and in the 1980s through industrial holding companies. Overall, they have returned 7.2% per year, just behind Australia, the world leader.

The Stockholm stock exchange was founded in 1863 and is the primary securities exchange of the Nordic countries. It is the world's 18th largest equity market and, since 1998, has been part of the OMX grouping. The largest SSE stocks are Ericsson, Teliasoner, Nordea Bank, Volvo, and Hennes & Mauritz.

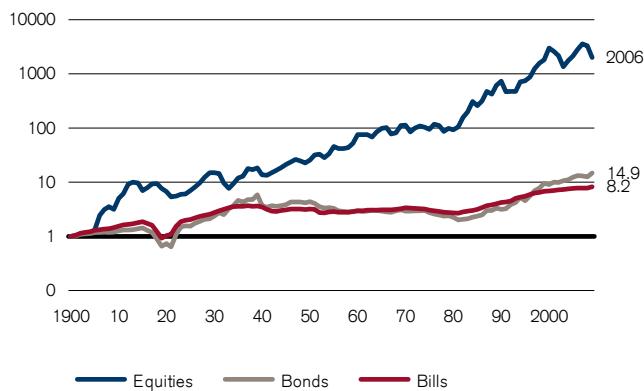
Despite the high rankings for real bond and bill returns, current Nobel prize winners will rue the instruction to invest in safe securities as the real return on bonds was only 2.5% per year, and that on bills only 1.9% per year. Had the capital been invested in domestic equities, the winners would have enjoyed immense fortune as well as fame.

## Capital market returns for Sweden

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 2006 as compared to 14.9 for bonds and 8.2 for bills. Figure 2 shows that, since 1900, equities beat bonds by 4.6% and bills by 5.2% per year. Figure 3 shows that the long-term real return on Swedish equities was an annualized 7.2% as compared to bonds and bills, which gave a real return of 2.5% and 1.9% respectively. For additional explanations of these figures, see page 25.

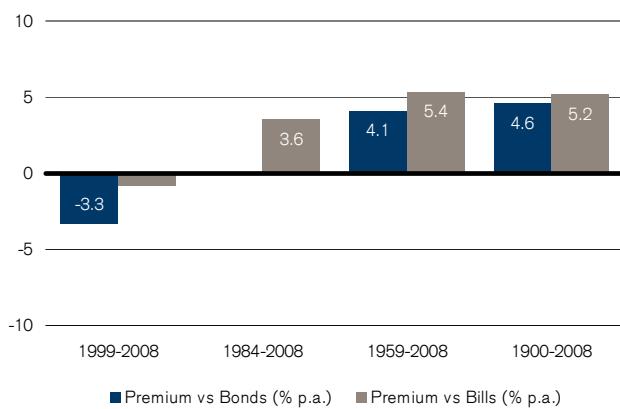
**Figure 1**

### Annualized performance from 1900 to 2008



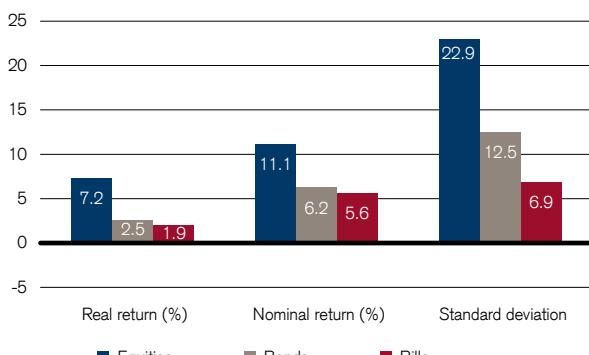
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Switzerland

# Traditional safe haven

For a small country with just 0.1% of the world's population and 0.008% of its land mass, Switzerland punches well above its weight financially and wins several gold medals in the global financial stakes.

The Swiss stock market traces its origins to exchanges in Geneva (1850), Zurich (1873) and Basel (1876). It is now the world's sixth-largest equity market, accounting for 2.3% of total world value. Major listed companies include world leaders such as Nestle, Novartis and Roche.

Since 1900, Swiss equities have achieved a mid-ranking real return of 4.1%, while Switzerland has been the world's best-performing government bond market, with an annualized real return of 2.6%. Switzerland has also enjoyed the world's lowest inflation rate: just 2.4% per year since 1900. Meanwhile, the Swiss franc has been the world's strongest currency.

Switzerland is, of course, one of the world's most important banking centers, and private banking has been a major Swiss competence for over 300 years. Swiss neutrality, sound economic policy, low inflation and a strong currency have all bolstered the country's reputation as a safe haven. Today, close to 30% of all cross-border private assets invested worldwide are managed in Switzerland.

### Capital market returns for Switzerland

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 80 as compared to 16.2 for bonds and 2.4 for bills. Figure 2 shows that, since 1900, equities beat bonds by 1.5% and bills by 3.3% per year. Figure 3 shows that the long-term real return on Swiss equities was an annualized 4.1% as compared to bonds and bills, which gave a real return of 2.6% and 0.8% respectively. For additional explanations of these figures, see page 25.

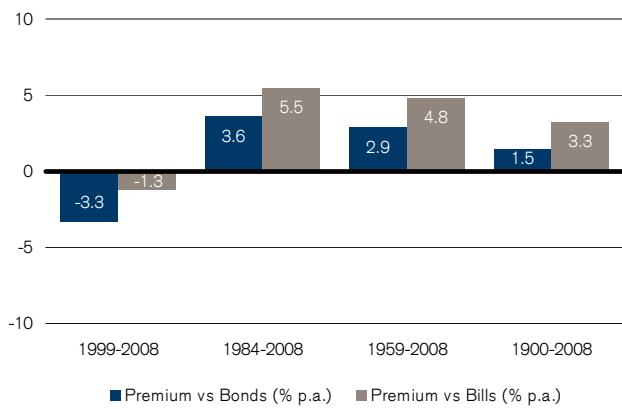
**Figure 1**

### Annualized performance from 1900 to 2008



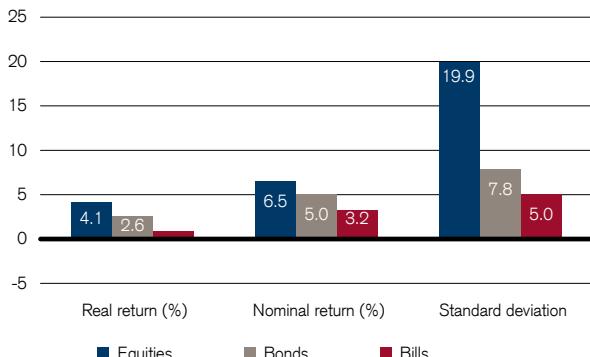
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## United Kingdom

# Global center

Organized stock trading in the UK dates from 1698. This mostly took place in City of London coffee houses until the London Stock Exchange was formally established in 1801. By 1900, the UK equity market was the largest in the world, and London was the world's leading financial center, specializing in global and cross-border finance.

Early in the 20th century, the US equity market overtook the UK, and nowadays, both New York and Tokyo are larger than London as financial centers. What continues to set London apart, and justifies its claim to be the world's leading international financial center, is the global, cross-border nature of much of its business.

Today, London is the world's banking center, with 550 international banks and 170 global securities firms having offices in London. The London foreign exchange market is the largest in the world, and London has the world's third-largest stock market, third-largest insurance market, and sixth-largest bond market.

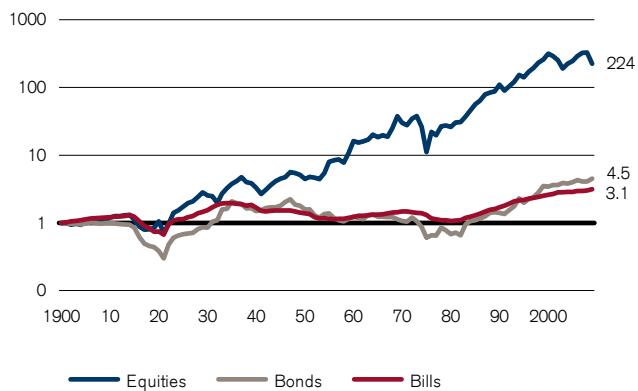
London is the world leader for derivatives traded over-the-counter with 36% of global turnover. It is the world's largest fund management center, managing almost half of Europe's institutional equity capital, and is home to some 1,000 hedge funds. More than half of the global foreign equity market and 70% of Eurobonds are traded in London. It is also a major center for commodities trading, shipping, and many other services.

### Capital market returns for the United Kingdom

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 224 as compared to 4.5 for bonds and 3.1 for bills. Figure 2 shows that, since 1900, equities beat bonds by 3.6% and bills by 4.0% per year. Figure 3 shows that the long-term real return on UK equities was an annualized 5.1% as compared to bonds and bills, which gave a real return of 1.4% and 1.1% respectively. For additional explanations of these figures, see page 25.

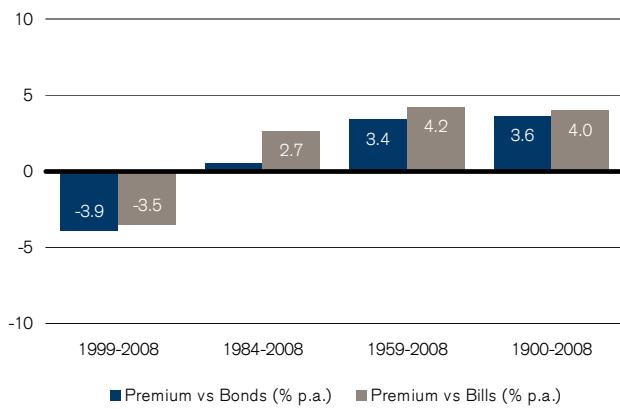
**Figure 1**

#### Annualized performance from 1900 to 2008



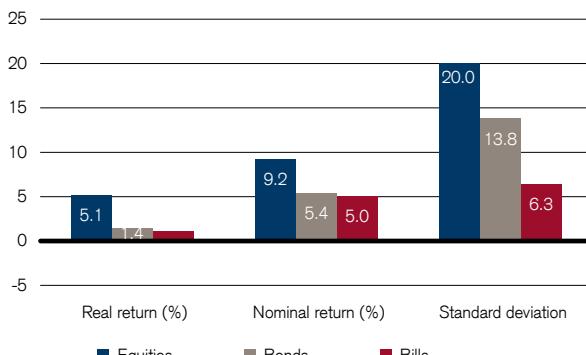
**Figure 2**

#### Equity risk premium over 10 to 109 years



**Figure 3**

#### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## United States

# Financial superpower

In the 20th century, the United States rapidly became the world's foremost political, military, and economic power. After the fall of communism, it became the world's sole superpower.

The USA is also a financial superpower. It has the world's largest economy, and the dollar is the world's reserve currency. Its stock market accounts for 44% of total world value, over four times more than Japan, its closest rival. The USA also has the world's largest bond market.

US financial markets are also the best documented in the world and, until recently, most of the long-run evidence cited on historical asset returns drew almost exclusively on the US experience. Since 1900, US equities and US bonds have given real returns of 6.0% and 2.1%, respectively.

There is an obvious danger of placing too much reliance on the excellent past performance of US stocks. The New York Stock Exchange traces its origins back to 1792. At that time, the Dutch and UK stock markets were already nearly 200 and 100 years old, respectively. Thus, in just a little over 200 years, the USA has gone from zero to a 44% share of the world's equity markets.

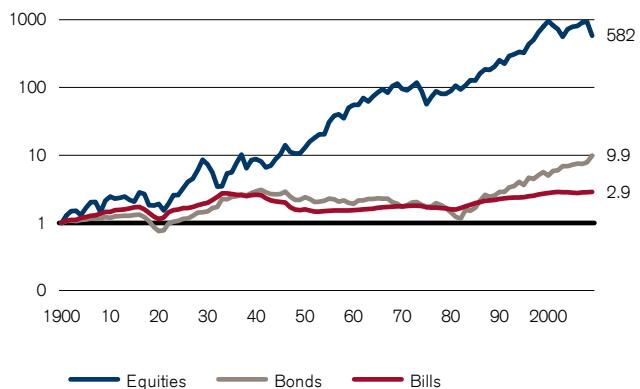
Extrapolating from such a successful market can lead to "success" bias. Investors can gain a misleading view of equity returns elsewhere, or of future equity returns for the USA itself. That is why this Yearbook focuses on global returns, rather than just those from the USA.

### Capital market returns for the United States

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 582 as compared to 9.9 for bonds and 2.9 for bills. Figure 2 shows that, since 1900, equities beat bonds by 3.8% and bills by 5.0% per year. Figure 3 shows that the long-term real return on US equities was an annualized 6.0% as compared to bonds and bills, which gave a real return of 2.1% and 1.0% respectively. For additional explanations of these figures, see page 25.

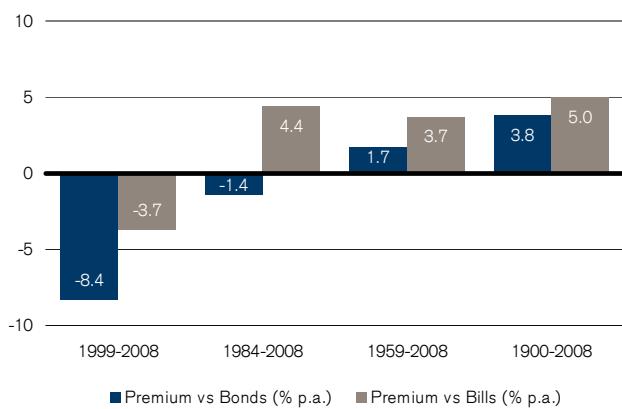
**Figure 1**

### Annualized performance from 1900 to 2008



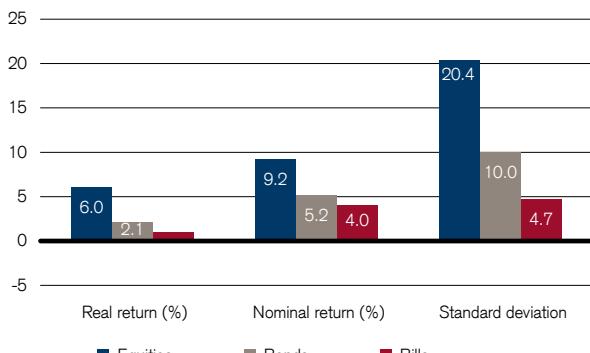
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## World

# Globally diversified

It is interesting to see how the 17 Yearbook countries have performed in aggregate over the long run. We have therefore created a 17-country world equity index denominated in a common currency, in which each country is weighted by its starting-year equity market capitalization, or in years before capitalizations were available, by its GDP. We also compute a 17-country world bond index with each country weighted by GDP.

These indexes represent the long-run returns on a globally diversified portfolio from the perspective of an investor in a given country. The charts opposite show the returns for a US global investor. The world indexes are expressed in US dollars; real returns are measured relative to US inflation; and the equity premium versus bills is measured relative to US treasury bills.

Over the 109 years from 1900 to 2008, Figure 1 shows that the real return on the world index was 5.2% per year for equities, and 1.8% per year for bonds. It also shows that the world equity index had a volatility of 17.6% per year. This compares with 22.7% per year for the average country and 20.4% per year for the USA. The risk reduction achieved through global diversification remains one of the last "free lunches" available to investors.

### Capital market returns for World

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 259 as compared to 7.0 for bonds and 2.9 for bills. Figure 2 shows that, since 1900, equities beat bonds by 3.4% and bills by 4.2% per year. Figure 3 shows that the long-term real return on World equities was an annualized 5.2% as compared to bonds and bills, which gave a real return of 1.8% and 1.0% respectively. For additional explanations of these figures, see page 25.

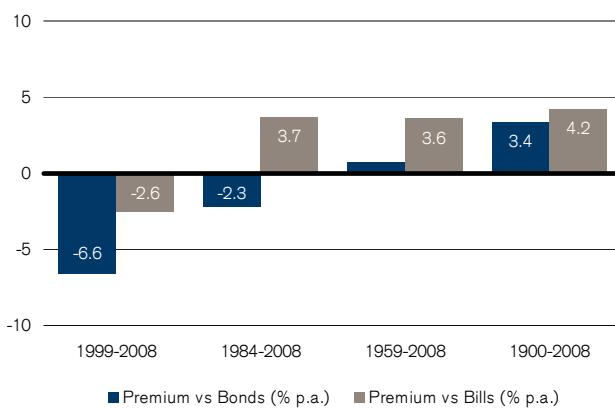
**Figure 1**

### Annualized performance from 1900 to 2008



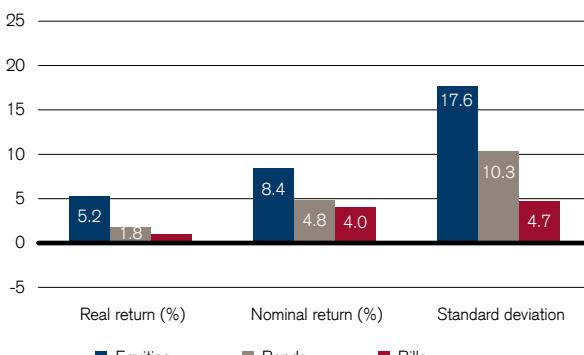
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## World ex-US

# Rest of the world

In addition to the two world indexes, we also construct two world indexes that exclude the USA, using exactly the same principles. Although we are excluding just one out of 17 countries, the USA accounts for roughly half the total equity market capitalization of our 17 countries, so the 16-country world ex-US equity index represents approximately half the total value of the world index.

We noted above that, until recently, most of the long run evidence cited on historical asset returns drew almost exclusively on the US experience. We argued that focusing on such a successful economy can lead to "success" bias. Investors can gain a misleading view of equity returns elsewhere, or of future equity returns for the US itself.

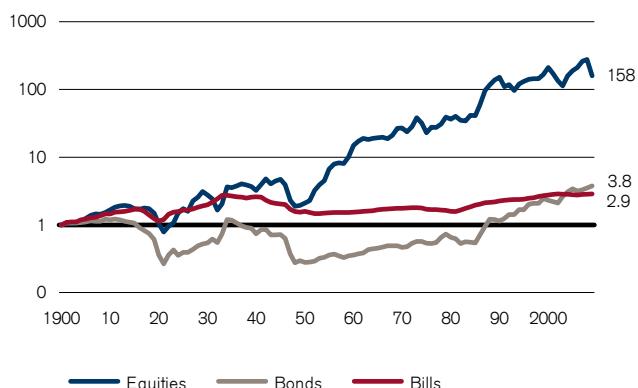
The charts opposite confirm this concern. They show that, from the perspective of a US-based international investor, the real return on the world ex-US equity index was 4.8% per year, which is 1.2% per year below that for the USA. This suggests that, although the USA has not been a massive outlier, it is nevertheless important to look at global returns, rather than just focusing on the USA.

### Capital market returns for the World ex-US

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 158 as compared to 3.8 for bonds and 2.9 for bills. Figure 2 shows that, since 1900, equities beat bonds by 3.5% and bills by 3.7% per year. Figure 3 shows that the long-term real return on World ex-US equities was an annualized 4.8% as compared to bonds and bills, which gave a real return of 1.2% and 1.0% respectively. For additional explanations of these figures, see page 25.

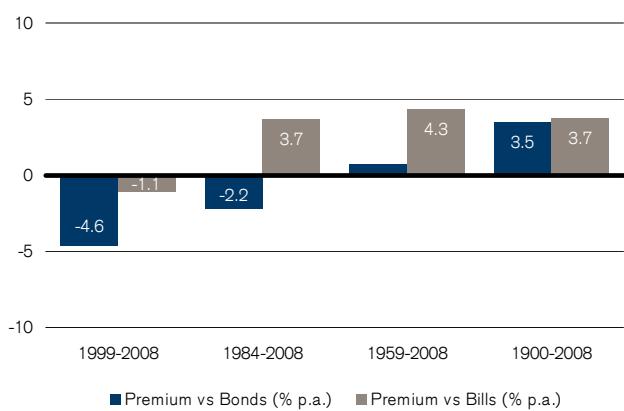
**Figure 1**

### Annualized performance from 1900 to 2008



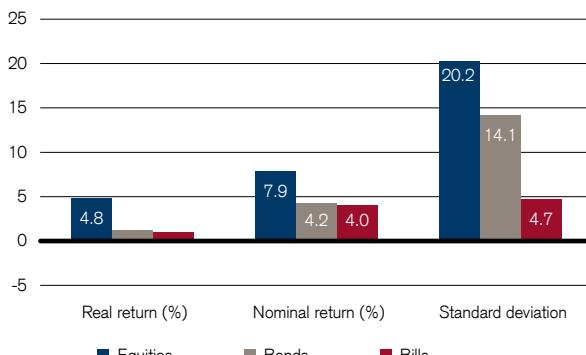
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.



## Europe

# The Old World

The Yearbook documents investment returns for 12 European countries. Seven are members of both the European Union and Eurozone; namely, Belgium, France, Germany, Ireland, Italy, the Netherlands and Spain. Three are EU members that have not adopted the euro; namely, Denmark, Sweden and the UK. Two are outside of the EU; namely, Norway and Switzerland. Loosely, we might argue that these 12 countries come from the Old World.

It is interesting to assess how well European countries as a group have performed, compared with our world index. We have therefore constructed a 12-country European index using the same methodology as for the world index. As with the world index, this European index can be designated in any desired common currency. For consistency, the figures opposite are in US dollars from the perspective of a US international investor.

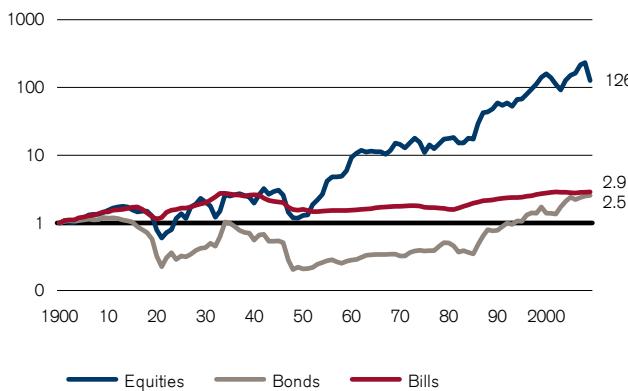
Figure 1 opposite shows that the real equity return on European equities was 4.5%. This compares with 5.2% for the world index, indicating that the Old World countries have underperformed. This may relate to the destruction from the two world wars, where Europe was at the epicenter; or to the fact that many of the New World countries were resource-rich; or perhaps to the greater vibrancy of New World economies.

## Capital market returns for Europe

Figure 1 shows that, over the last 109 years, the real value of equities, with income reinvested, grew by a factor of 125.9 as compared to 2.5 for bonds and 2.9 for bills. Figure 2 shows that, since 1900, equities beat bonds by 3.6% and bills by 3.5% per year. Figure 3 shows that the long-term real return on European equities was an annualized 4.5% as compared to bonds and bills, which gave a real return of 0.9% and 1.0% respectively. For additional explanations of these figures, see page 25.

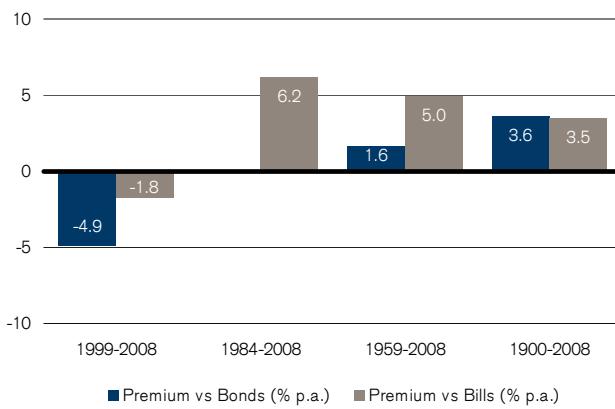
**Figure 1**

### Annualized performance from 1900 to 2008



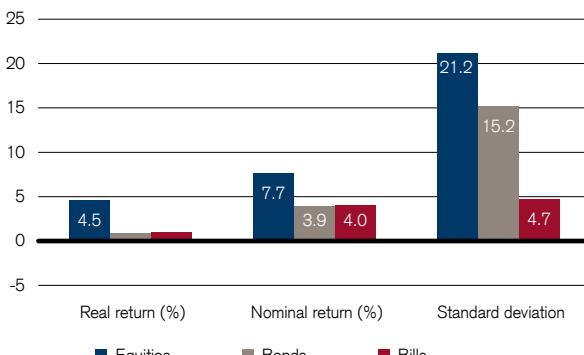
**Figure 2**

### Equity risk premium over 10 to 109 years



**Figure 3**

### Returns and risk of major asset classes since 1900



Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Sourcebook 2009.

# About the authors

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