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Stock market crashes and the art of investing.

Economic Briefing No. 29

Lessons from stock market history since 1925.

Investment horizon and risk.

Benefits of international diversification.

Investing regularly is more soothing on the nerves.

Economic Research & Consulting

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Stock market crashes and the art of investing.

It was as easy to make money on the stock exchanges in the booming nineties as to lose it during the first two years of the new millennium. Stock market crashes always appear unexpectedly and are painful. However, clever investors can protect themselves. To prevent the worst from happening, it helps to observe three basic rules of capital investment. Be sure to read this study or to talk with your financial advisor before buying stocks.

"My favorite time frame for holding a stock is forever."
Warren Buffett

1. Stock market crashes and booms

The nineties was a period of boom in which stocks outperformed their historical average; now, the tide has turned and investors are suffering an investment hangover. For some time, falling equity prices have been stretching investors' nerves. They have suffered huge losses following the bursting of the bubble in technology stocks in spring 2000 and the terrorist attacks in September 2001. 2001 saw a fall on the Swiss equity market of 22.0%, the worst decline since 1987.

A look back at stock market history shows that price declines of this scale have occurred repeatedly since 1925, albeit at irregular intervals. 1931, 1973, 1974, 1987 and 1990 saw similarly huge price declines of between 20% and 34% (see figure 1). The greatest loss in equity values in any single year occurred in 1974, when the decline amounted to 33.8%. This was especially critical as the previous year had also been very bad. The oil-price crisis of the 1970s dramatically reduced the outlook for global economic growth and equity prices. Nonetheless, the six crash years were countered by no less than 21 years of price gains of over 20%. 1985 was the absolute record year with a fantastic advance of 61.0%.

A comparison with the annual change in valuation of bonds (see figure 2) demonstrates clearly that the range of yields is much less pronounced than for equities. Bonds only posted negative yields in six years. The worst of these was 1989 when the decline was no more than 3.4%. Swiss bonds put in their best performance in 1993, with a gain of 14.5%.

Figure 3 demonstrates that the much greater rate of fluctuation in equity prices was compensated by a considerably higher return. CHF 100 invested in Swiss equities at the end of 1925 grew to around CHF 40 000, whereas bonds achieved just a fraction of this return with a move up to CHF 2300. The long-term risk premium or extra return from equities was around 4% per annum (8.2% v. 4.2%).The savings account is another safe capital investment – it offers the lowest return for the lowest risk. CHF 100 invested in a savings account in 1925 grew to just CHF 1000, an average annual return of 3.1%.

2. Periods of negative equity performance seen historically

Over the long term, equities have performed far better than other capital investments. However, gains do not develop in a straight line but are very irregular. Sharp declines occurred repeatedly, and periods of negative performance were often prolonged. Since 1925, the Swiss equity market has undergone six periods of huge price declines amounting to 20% or more, which lasted for at least a year (see figure 4).

The biggest crash was in 1929 and earns our special attention in this study. Most investors only know about it from the history books. The 1929 crash and the subse-

Figure 1: Swiss stocks are subject to major fluctuations

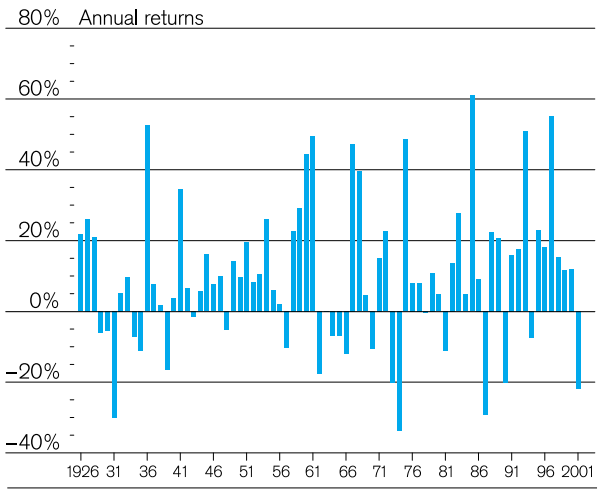
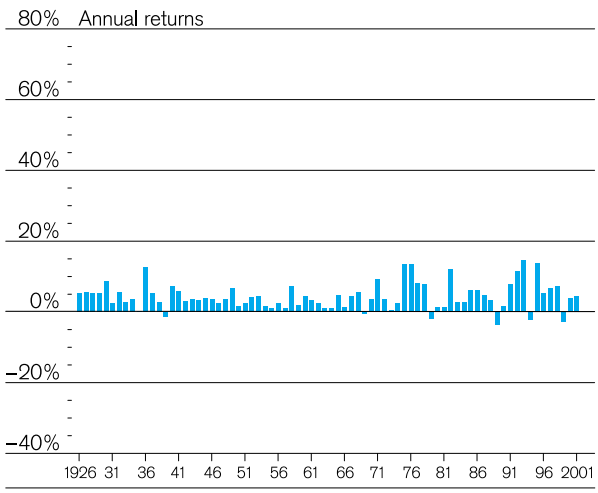


Figure 2: Barely any losses on Swiss bonds



quent Great Depression in the thirties represent the longest ever period of negative performance in the entire history of the Swiss and the global stock markets. Investors were hit by a sudden price crash which struck with unprecedented velocity. The economic and political environment became gradually worse, resulting in a period of stubbornly depressed markets which only hit its low in 1935. In the course of this depression, investors suffered a 41% decline in the value of their portfolios. However, these severe losses had more or less been made up again by the end of 1938. Investors were once again hit with the onset of World War II. They subsequently had to wait until the end of 1941 before the value of their assets finally overtook levels at the end of 1928. This period of negative performance lasted 13 years and was far and away the longest such period in the history of the Swiss stock market (see figure 5).

Looked at in terms of the extent of the overall decline, however, the period from 1928 to 1935 was not the worst! The value of Swiss investors' assets plummeted by almost 50% in the severe crash of 1973 and 1974. The Yom-Kippur war, rising US inflation and a surge in oil prices were important contributing factors to this sad stock exchange spectacle. Prices did not fully recover for five years, with the entire period of negative performance lasting a total of seven years.

The price declines between the end of 1961 and the end of 1966 were equally severe. This period saw a cumulative fall of around 37%. However, the economic background remained healthy, and equity prices staged a recovery from their lows within just two years. These seven years of negative performance can be subdivided into five years of a crash in stages and two years of rapid recovery – but in the reverse order of its seventies counterpart.

Since the start of the big equity market boom in 1982, there have been three periods of severe decline: the crash of 1987, the Gulf War of 1990 and the low following the terror attacks of September 2001. The 1987 crash hit Swiss stocks especially hard; they suffered a setback of nearly 30%. The central banks were quick to intervene, allaying the mood of crisis, and a relatively speedy recovery of just two years followed. The recovery from the 1990 stock market decline was just as fast; it saw a fall in equity values of 20%, the smallest in our analysis.

This study does not examine all crash scenarios. Often, setbacks were preceded by major price rises, or losses were recovered in just a few months, as a result of which they sometimes fail to appear in the annual comparisons. For example, the financial and economic crises in the emerging economies of South East Asia (1997) and Russia (1998) triggered severe price declines in their wake.

The sharp increase in volatility since 1997 and following the terror attacks of September 2001 is comparable

Figure 3: Stocks take the lead over the longer term

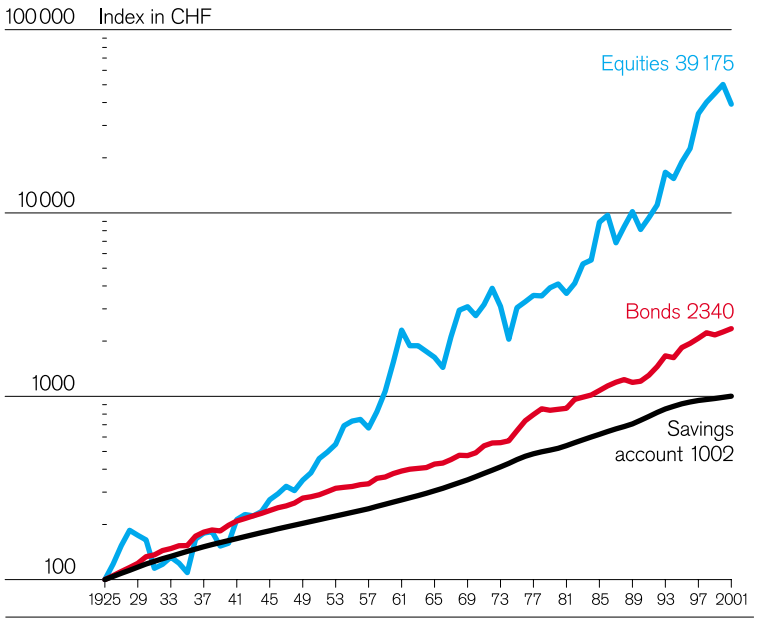


Figure 4: Major falls in Swiss share prices

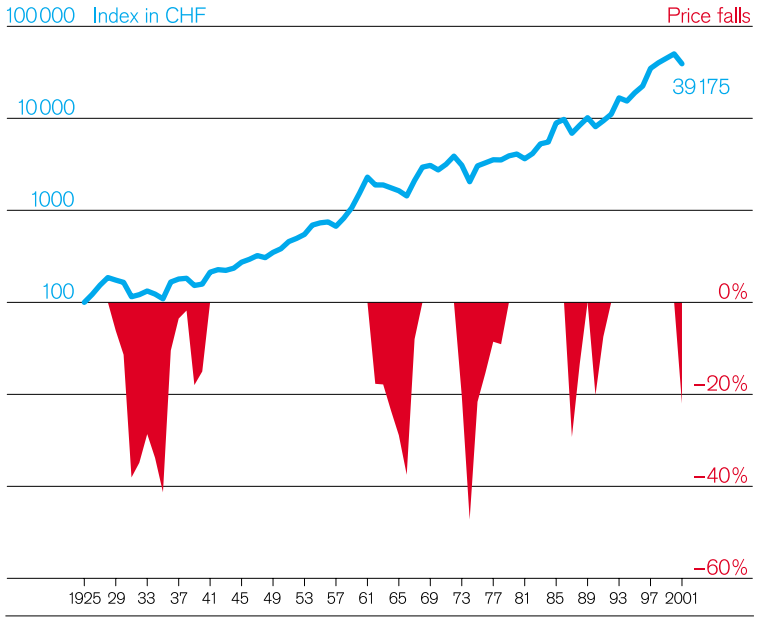


Figure 5: Every price fall is different

Negative period	1928–41	1961–68	1972–79	1986–89	1989–92	**Average**
Year of low	1935	1966	1974	1987	1990	
Maximum price fall	41 3%	37.5%	47.2%	29.3%	20.2%	**35.1%**
No. years of price fall	7	5	2	1	1	**3.2**
No. years of price recovery	6	2	5	2	2	**3.4**
No. of negative years	13	7	7	3	3	**6.6**
Losses recouped per year	6.9%	18.8%	9.4%	14.7%	10.1%	**12.0%**

with similar crises like the oil crisis of 1983 and the 1987 crash. It is nothing out of the ordinary in an historical comparison and matches our historical measures in times of crisis.

In Switzerland, price declines generally saw stocks lose over a third of their value over an average period of three years. A full recovery then took about another three years (see figure 5). Differences between the various occurrences, however, are major: in the case of the longest price decline following 1929, the recovery took six years. The equivalent periods following the 1987 and 1990 declines were just two years. In a recovery phase, an average of around 12% of total losses were made up annually.

In 2001, the Swiss stock exchange lost 22.0% of its value. We cannot yet say if this represents the low point – this only becomes apparent with hindsight. In the past, we find example periods of stock market declines that were very short or very long. Stock market crashes occur repeatedly and badly hurt those invested at the time. Nevertheless, investors need not feel entirely defenceless! There are three basic principles investors should follow if they wish to reduce the impact of equity price declines:

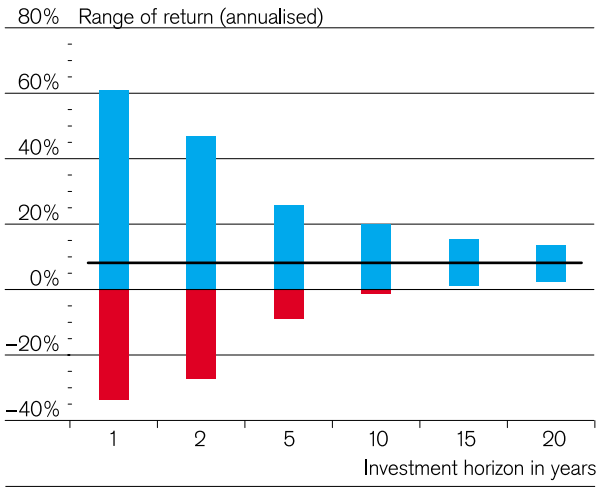
1. Patience brings its rewards (see section 3).
2. Don't place all your eggs in one basket (see section 5).
3. Invest at regular intervals (see section 7).

3. Lesson 1: a long-term horizon smooths over most of the cracks

The timing of your investments can prove to be lucky or unlucky and has a major impact on their performance. However, short-term fluctuations often muddy the more long-term picture. Of course we'd all love to buy into the market just before the upswing and take our profits just before the crash. However, few investors succeed in carrying off masterstrokes of this nature, which leaves us with just the one real alternative: aim to reduce the impact of price fluctuations by selecting a sufficiently long investment horizon.

Figure 6 illustrates the spread of returns on Swiss equities over a range of different investment horizons. The two extremes within a twelve-month period are +61% and –34%. Over a two-year investment horizon, the two extremes are still high (+47% and –27%, annualised figures). On a five-year horizon, the differences in the returns achieved between the best and worst entry times have already fallen sharply. Annual returns then range from +26% to –9%, representing an average gain/loss for each of the five years. The maximum cumulative loss in this case is therefore still more than

Figure 6: A long investment horizon reduces the risk of losses



40% over the full five years! On a 10-year horizon, the spread of returns narrows further to +20% to –1% per annum. In the past, there has never been a period of 14 years or longer in which Swiss stocks have generated a negative return. In a worst-case scenario, therefore, an investor needs a remarkable supply of patience to merely make up his/her losses.

A further narrowing of the return spread is observed as we extend our investment horizon to 15 and to 20 years. However, this reduction in the level of risk does not progress in a straight line. Extending an investor's horizon from one to five years represents the biggest risk reduction in absolute terms. The further we shift to the right along the time axis in figure 6, the smaller the additional reduction in the return spread. In fact, returns move ever closer to their historic mean of 8.2%. Extending the investment horizon reduces the extreme return values symmetrically. Hence, avoiding losses by tying up investments for a long period simultaneously reduces the potential size of positive returns. The primary goal of investing is not, of course, the prevention of losses, but the attainment of gains. No investor will be happy to see his/her investment generate a zero return after a full ten years. They would have been better off buying bonds in that case. Anyone prepared to invest a part of their assets in equities should expect to see their investment outperform other investment classes such as bonds over a sufficiently long time period.

Hence, investors are interested in comparing the relative performance of the different asset classes. Our method of analysis also takes indirect account of inflation, which averaged about 2.4% in Switzerland over the 76-year period observed. Even if an investment does not generate a nominal loss, the return might be too low to prevent a loss in purchasing power.

Figure 7 compares the annual returns on Swiss equities and bonds over rollover periods over 20 years. This is a relatively strict benchmark since bonds have always generated a positive yield of around 4% over the entire 20-year period observed. A comparison of rollover equity and bond returns over a period of 20 years shows that Swiss equities have outperformed bonds on an investment horizon of 20 years in more than 91% of cases, i.e. most of the time. Nevertheless, in five of the 57 20-year periods reviewed, bonds generated a higher return than equities. Extremely cautious investors therefore need a very long investment horizon if they wish to invest in equities.

Figure 7: Equities didn't always beat bonds – even over a 20-year time period

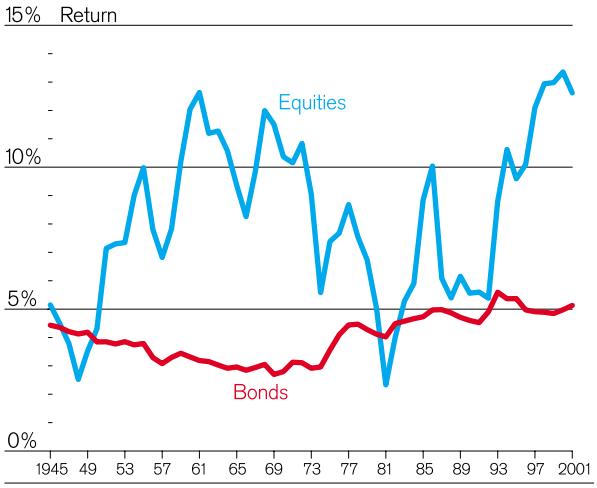
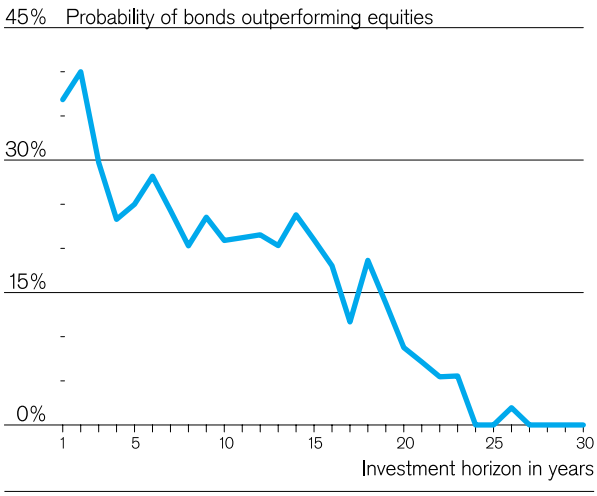


Figure 8 shows, across different investment horizons, how often low-risk bonds outperformed equities. For horizons of up to two years, the probability is high at around 40%. It eases back very gradually and only sinks below the 20% level after 16 years. Thereafter, the probability falls slightly more rapidly towards 0%. We have even experienced a 26-year period (end of 1961 to end of 1987) in which Swiss equities underperformed bonds! This only goes to show that a bond yield of around 4% is no easy barrier to breach. Nonetheless, we must remember that this represents a worst-case equity scenario. In all other periods analysed, equities have left bonds standing – and normally by quite some distance.

Figure 8: The longer the investment horizon, the less attractive bonds are



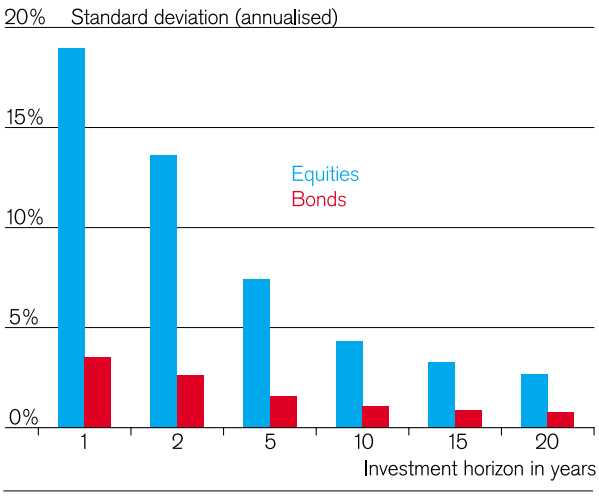
Often, risk is not portrayed as a direct comparison with or frequency of an event, but is measured in terms of the statistical concept of standard deviation (volatility). This measures the average deviation from the expected return. The more stock market returns fluctuate around an expected value, the higher the risks involved, but the greater the opportunities too. As the probability of a sharp increase in asset values rises, so too the danger of incurring a major loss increases.

Figure 9 illustrates the standard deviation for equity (blue) and bond (red) returns by investment horizon. Equity price volatility is more than five times higher than bond price volatility (19.0% v. 3.6%) over a twelve-month horizon. Extending the investment period to five years reduces the risk for equities by over 50%. If we extend the investment horizon to 15 years, the risk associated with equities sinks even lower than the risk for bonds on a twelve-month horizon. This result is significant. Our example offers a clear illustration of the fact that a long investment horizon considerably reduces the level of risk associated with equities.

It is equally true that the standard deviation for bond yields falls as the investment horizon increases. However, since bonds are a low-risk investment vehicle anyway, any increase in the investment horizon can only reduce yield volatility by a comparably modest amount. The standard deviation for bond yields, which is 3.6% on a twelve-month horizon, only falls slightly to 0.8% when we extend the horizon to twenty years.

The difference between volatilities for equities and bonds narrows increasingly as the investment period grows. On a twelve-month horizon, it amounts to 15 percentage points, and falls back to barely 2 percent after twenty years. The reduced differential between the blue (equities) and red (bonds) bars in the chart illustrates the benefits of a longer investment horizon.

Figure 9: Above-average decline in equity volatility



Equity investment can lead to big losses or gains for investors within a short time period. The latest events can create a mood of euphoria or fear. In the long term, however, these short-term fluctuations in equity prices have a diminishing impact on performance. Anyone who bought stocks valued at CHF 10 000 shortly before the crash of October 1987 would have seen their value drop to barely CHF 7000 some six months later. Had this investor held on to those stocks for the next 14 years and sold them at their lows in September 2001, he/she would have realised a sum of around CHF 34 000. As this shows, even in this case where the timing was unfortunate on two occasions, an annual return of 9.1% was still achieved. This is a clear illustration of the fact that a long-term investment horizon does a lot to smooth the impact of short-term stock market fluctuations.

To summarise: over the short term, there may be an advantage in putting one's money in low-risk bonds. Over the longer term, however, an investor can achieve almost as low a level of risk as for bonds with an investment in more risky instruments, while at the same time benefiting from a considerably higher potential return. However, time horizons of 15 to 20 years are too long for the majority of investors. We shall now go on to look at other options for reducing risk which also permit a shorter time horizon.

4. The historical performance of international capital investments

A whole range of instruments and markets vie for the attention of the investor. No-one is obliged to restrict their investments to their home market, which would be inadvisable. Figure 10 illustrates the historical performance of selected international equity and bond markets. (You will find a detailed analysis of the development of the individual markets in Economic Briefing No. 23: Investments 1925 to 2000.)

Given the extent of losses on all major equity markets in 2001, the corresponding asset values and average returns had to be revised downwards – in many cases significantly so – in a year-on-year comparison. UK equities overtook German equities to assume third place in the long-term performance ranking.

The difference between the best and the worst performing markets is considerable, both for equity and bond markets. CHF 100 invested in US equities at the end of 1925 would have risen to almost CHF 65 000. This is almost 21 times more than it would have grown if invested in the Italian equity market. The differences in bond yields are even greater: in the best market, Switzerland, the value of the investment at the end of the period was 33 times greater than for Japanese bonds. German bond investors suffered the greatest losses, with their bonds having been rendered worthless in 1945! There are countless ways of investing your money in addition to equity and bond investment. Although few uninterrupted data series pertaining to these investment forms go back as far as 1925, we were able to include a CHF savings account and the gold price in our analysis. This demonstrates that a savings account entails practically no risk, but generates an average annual return of just over 3% p.a. Gold, however, yielded an even lower return.

An investor who invests in a savings account is paid a rate of interest only slightly higher than inflation. Anyone who wants a better return must accept a higher level of risk. However, they might then miss their target altogether! Figure 11 presents a risk-return chart for the different investment categories.

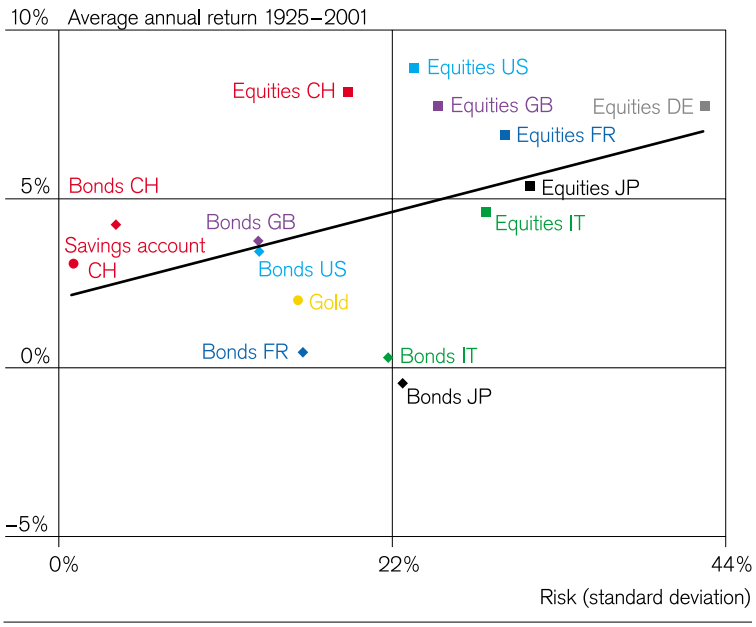
Whereas the savings account and bond markets are mainly to be found in the bottom left of the chart, representing low return and low risk, almost all of the equity markets feature in the top right of the chart, representing high return and high risk. This shows the correlation between risk and return which generally extends back through historical data series. Despite the long period under review, past risks were not always adequately rewarded by a corresponding performance. In this regard, Japanese, Italian and French bonds put in a weak performance. In contrast, the US, Swiss and UK equity markets recorded a positive performance. These exceptions to the rule are impressive proof, on the one hand, that expectations are not always fulfilled and, on the other, that past performance is not necessarily a good indicator of future performance.

The most attractive investments are those as far to the upper right as possible on the chart: this area represents a high return for a low level of risk. Unfortunately, such ideal investment instruments are very rare.

Figure 10: The hit parade of capital investments 1925 to 2001

	Index 31.12.2001 (31.12.1925 = 100 CHF)	Average return (geometric mean)	Risk (standard deviation)	Maximum return (year)	Minimum return (year)
Equities US	64 505	8.89%	23.3%	89.8% (1936)	–43.8% (1931)
Equities CH	39 175	8.17%	19.0%	61.0% (1985)	–33.8% (1974)
Equities GB	29 011	7.75%	24.9%	123.8% (1975)	–61.5% (1974)
Equities DE	28 846	7.74%	42.5%	707.1% (1949)	–70.9% (1934)
Equities FR	15 941	6.90%	29.3%	216.8% (1941)	–49.5% (1949)
Equities JP	5 344	5.37%	31.0%	117.9% (1972)	–57.8% (1946)
Equities IT	3 091	4.62%	28.1%	114.1% (1944)	–47.9% (1974)
Bonds CH	2 340	4.24%	3.6%	14.5% (1993)	–3.4% (1989)
Bonds GB	1 647	3.76%	13.0%	44.8% (1936)	–37.3% (1933)
Bonds US	1 307	3.44%	13.1%	52.3% (1936)	–28.6% (1949)
Bonds FR	141	0.46%	15.9%	27.3% (1944)	–53.2% (1946)
Bonds IT	125	0.30%	21.6%	48.6% (1996)	–65.0% (1946)
Bonds JP	70	–0.46%	22.5%	50.2% (1936)	–46.0% (1947)
Bonds DE	0	n.a.	37.5%	130.0% (1949)	–100.0% (1945)
Savings account CH	1 002	3.08%	0.8%	5.1% (1992)	1.2% (1999)
Gold	448	1.99%	15.6%	129.1% (1979)	–31.3% (1981)

Figure 11: The bigger the return, the higher the risk



Swiss equities come the closest to matching the required profile.

5. Lesson 2: diversification brings a greater return for less risk

With the benefit of hindsight, we can see that 1925 would have been an ideal time to invest in US equities. In the 76 years since then, they have yielded the biggest return. But who could have foreseen such a development back then? The US market in 1925 resembled what we would classify as an emerging market today. It is always very difficult to pinpoint the best-performing market of the future.

Moreover, despite a poor performance, a specific investment category may still be of value if there is little correspondence between its performance and that of other categories, since it can then serve to help reduce risk. If assets are spread across various investment categories, portfolio risk is influenced less by the volatility of individual investments than by relationships between different investment categories. The aim of diversification is to achieve the maximum return for a given level of risk, or to minimise the risk associated with a specific return.

The statistical measure of mutual dependence between two investment categories is the correlation. This measure can be expressed as a value between +1 and –1. A correlation of +1 means that the returns on two investment categories correspond 100%. An investment category pairing of this nature offers no diversification potential whatsoever. A value of –1 means that the investment pair develops in precisely opposite directions. If the one outperforms the benchmark, the other underperforms the benchmark by the same amount. Investments with a negative correlation offer the highest diversification potential. In practice, however, a correlation of zero is already very low. This correlation already indicates that the two investments in the pairing develop totally independently of one another. It is impossible to predict how changes in the price of the one asset will affect the price of the other. Such investments are nevertheless a suitable means of reducing risk. Swiss and Japanese equities are a good example of an investment pair with a very low correlation (0.27).

Figure 12 illustrates the annual return (in CHF) on both Swiss and Japanese equities every year from 1925 to 2001. Each dot on the chart stands for the combined return from the two markets. In 1972, for instance, the return in Japan was 117%, whereas in Switzerland it was just short of 23% (the dot on the far right in the chart). The dots are virtually spread across the entire chart, and it is hard to identify any pattern.

Figure 13 compares Swiss and US equities in exactly the same way. In 1936, for instance, the return in the USA was almost 90%, whereas in Switzerland it was just short of 53% (the dot on the far right in the chart). In fact, both markets performed very well that year. Similar parallels can be observed for the years 1931 and 1974, two negative years for both markets. On the other hand, years like 1935, in which US equities achieved a very high return while Swiss equities put in a negative performance, are very much the exception. These are, therefore, two markets which tend to move in the same direction: high as well as low returns generally occur together. Taking all the dots together produces an average correlation of the two stock markets of 0.60. Hence, for the past 76 years, we can say that the correlation between the Swiss and the US equity markets is clearly positive.

The risk/return combinations illustrated in figure 14 can be achieved by applying the appropriate weightings to investment pairs in a portfolio. The individual dots

Figure 12: Low correlation between equity returns in Switzerland and Japan

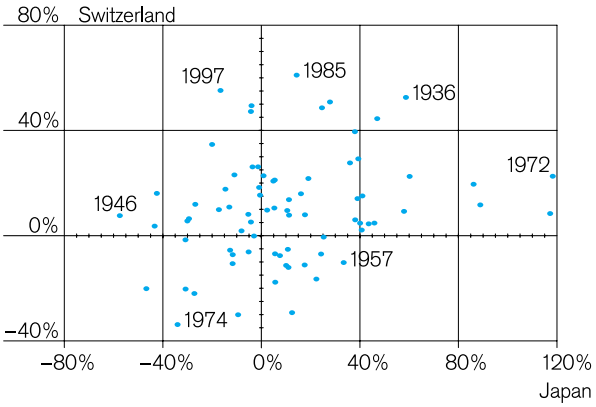
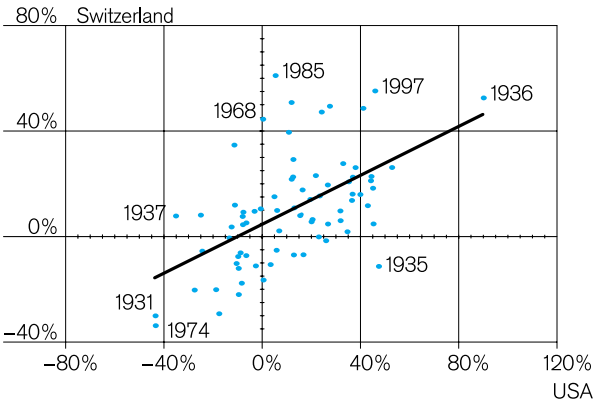


Figure 13: Close correlation between equity returns in Switzerland and the USA



moving from the bottom of the chart to the top represent combined quotas of Swiss and US equities differing by 5% at each step. An analysis of this portfolio mix leads to an interesting finding: in the past, it was not ideal to hold just Swiss equities. A partial switch into US equities could have improved one's return at the same time as reducing one's level of risk! Only when the proportion of US equities reached about 25% (fifth dot from the bottom at the far left of the chart) did risk start rising again (with progressively higher returns).

Figure 15 illustrates the effects of different correlations on the risk-return profile. If the correlation between the two markets is 1, investors can select from a linear combination of returns and volatilities (black line). However, the red line is always positioned to its left. Diversification can bring a corresponding advantage. In any portfolio, fluctuations in return across the individual markets will cancel one another out to some extent. This explains why diversification always raises the return for a given level of risk (or, conversely, reduces the level of risk for a given return).

If the correlation between Swiss and US equities were not 0.60 but 0, the benefit would be even greater (blue line). A correlation of –1 (green line) would produce the greatest possible benefit. In this case it would even be possible to construct a risk-free portfolio with an allocation of 55% for Swiss equities and 45% for US

Figure 14: Diversification boosts return and lowers risk

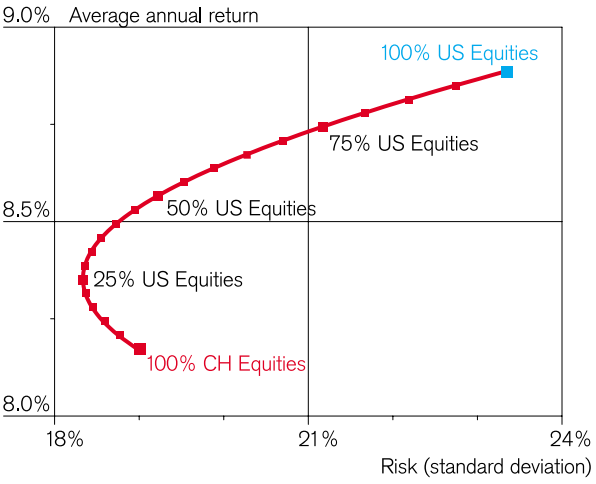
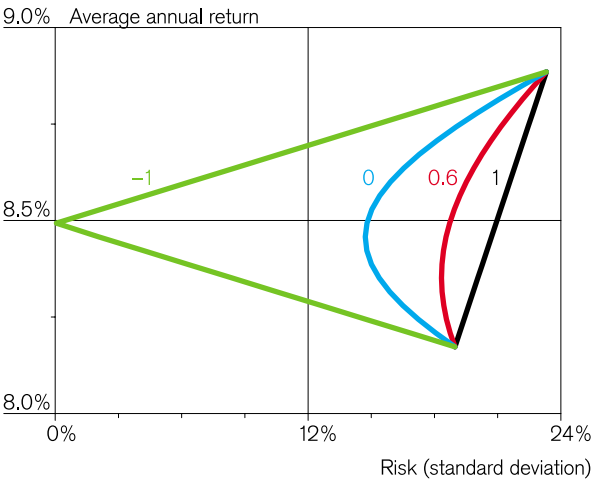


Figure 15: Low correlation boosts the benefits of diversification



equities. Unfortunately, in reality, it is rare that a pair of investments produces a negative correlation. Nonetheless, any correlation of less than 1 will already lead to an optimisation of the portfolio, as we have demonstrated above.
Of course, diversification can cover more than two investment categories. An optimised portfolio consists of a series of investments. As we will discover in the following chapter, this can help us achieve even better risk-return profiles.

6. Practical benefits of international diversification

The concrete implementation of a diversification strategy can be illustrated by means of some simple sample portfolios. Figure 16 shows the breakdown of these portfolios.
Factors such as investment horizon, risk tolerance and risk capacity will determine what proportion of assets an investor wants to hold in equities. Let us assume that he/she invests the rest of his/her portfolio in bonds. A quarter of the investor's assets will be invested in equities if the "income" strategy is selected. The "balanced" and "growth" portfolios hold about 50% and 75%, respectively, of their assets in equities. The "equities" strategy is a 100% equities investment. For all sample strategies, 40% of the equity investment is invested in Swiss shares. The rest is divided equally between the six other markets (Germany, France, the UK, Italy, Japan and the USA). The lion's share of the bond investment is invested in Swiss bonds. A small proportion of just over 10% is divided equally between the remaining bond markets. The development of these portfolios since 1925 is presented in figure 17 using the same measures as in figure 10.

Figure 16: Diversification strategies

	"Income"	"Balanced"	"Growth"	"Equities"
Equities	**25%**	**50%**	**75%**	**100%**
CH	10.0%	20.0%	30.0%	40.0%
DE, FR, GB, IT, JP, US each	2.5%	5.0%	7.5%	10.0%
Bonds	**75%**	**50%**	**25%**	**0%**
CH	66.0%	44.0%	22.0%	0.0%
DE, FR, GB, IT, JP, US each	1.5%	1.0%	0.5%	0.0%

There is a considerable difference in the results of the four different strategies. For a relatively low level of risk, the "income" portfolio achieves a good return of 5.8%. A doubling of the equity quota - which gives us a "balanced" portfolio – boosts the return by 1.5 percentage points. Even these relatively minor differences in return lead to a total asset value almost three times as large after a period of 76 years. The compound interest effect has an even greater impact for the "growth" and "equities" strategies.
For the equities portfolio, annual fluctuations vary from –37% to +75%. These are very big price fluctuations. By comparison with the majority of individual markets, however, this represents a considerable narrowing of the band (see figure 10). Only the Swiss market is subject to narrower fluctuation bands. In terms of standard deviation, Swiss equities and the international equities portfolio exhibit more or less identical fluctuation of 19%.
The chart of the four diversified investment strategies in figure 18 is especially striking.The pure equities portfolio (red), on the other hand, exceeds the performance of every individual equity market in terms of realised return. This seemingly surprising result is due to the fact that equities have unlimited potential to rise, and can fall no more than 100% in a worst-case scenario. High returns on individual investments therefore overcompensate the losses suffered by a portfolio. The greater the volatility of individual investments, the bigger this effect.
There is an additional benefit deriving from broad diversification: lower risk. When investing in the "equities" portfolio, investors are generally subject to far lower levels of risk than when investing in practically all individual equity markets.

All stock markets can be subject to very pronounced short-term fluctuations. It is also possible that one does not even earn an appropriate return to compensate for these extreme fluctuation levels. In this regard, the Swiss market has been extremely stable. CHF 100 invested in 1925 would have grown to over CHF 39 000 today. Nevertheless, international diversification over this same period would have also paid off for a Swiss investor. The same initial CHF 100 would, in this case, have grown to over CHF 102 000 today for a near-identical level of risk.

The "growth" strategy (orange) with an equity quota of 75% performed only slightly less well than the US equi-

Figure 17: Hit parade of diversification strategies

	Index 31.12.2001 (31.12.1925 = 100 CHF)	Average return (geometric mean)	Risk (standard deviation)	Maximum return (year)	Minimum return (year)
"Income"	7 350	5.82%	6.6%	26.2% (1949)	–9.5% (1974)
"Balanced"	20 669	7.27%	10.5%	42.6% (1949)	–18.7% (1974)
"Growth"	49 633	8.51%	14.7%	58.9% (1949)	–27.9% (1974)
"Equities"	102 121	9.55%	19.0%	75.3% (1949)	–37.1% (1974)

ty market for a considerably lower level of risk and actually outperformed the Swiss equity market. The risk levels for the "balanced" (green) and "income" (blue) portfolios are lower, and their returns are, in essence, proportionately smaller.

All the portfolio types feature on the left of the chart above the majority of individual markets, which tells us that they each possess an excellent risk/return ratio. Diversified strategies permit the attainment of the performance level the individual investor desires: a high return for a relatively low level of risk!

7. Lesson 3: investing regularly reduces risk

Most equity markets move in parallel when prices undergo a sharp decline, falling in unison. Hence, in the short term, equity investors may suffer major price falls, even if they have a well-diversified portfolio. However, it is possible to limit the negative impact of these global market crashes: by investing on a regular basis, it is possible to avoid suffering major initial losses.

For example, an investor might invest his/her capital in four different phases, with just one quarter being invested according to the selected strategy in an initial phase. In the meantime, the non-invested portion is left in the investor's savings account. After one year, the invested proportion is raised to 50%. This jumps to 75% at the start of year three, with the final 25% being invested after the third year has elapsed.

Figure 19 illustrates the highest and the lowest returns for the four sample strategies "income" (green line), "balanced" (black), "growth" (blue) and "equities" (red) for a variety of different investment horizons. The bigger the equities proportion for the relevant strategy, the bigger the gap between the highest and lowest returns. The highest return for the "equities" strategy on a twelve-month investment horizon was 20.6%, the biggest loss –5.8%. The differences in return are reduced considerably by spreading the investment over a period of three years for short investment horizons. This helps investors circumvent the worst of the peaks and troughs resulting from stock market booms and crashes. The longer the investment horizon, the narrower the band of observed returns.

Even for an investment period of just five years, "income" strategy investors have not suffered a loss over the past 76 years. The longest a "balanced" strategy investor has had to wait to achieve a positive return is nine years, and any losses were already fairly modest after just six years. For the "growth" and "equities" strategies, an investment horizon of 10 and 13 years

Figure 18: Diversification strategies clearly beat stock-picking strategy

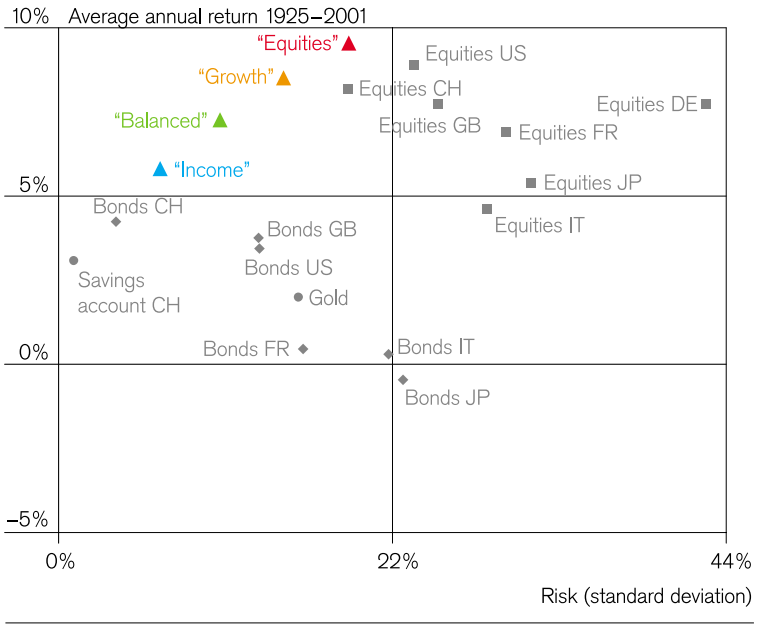
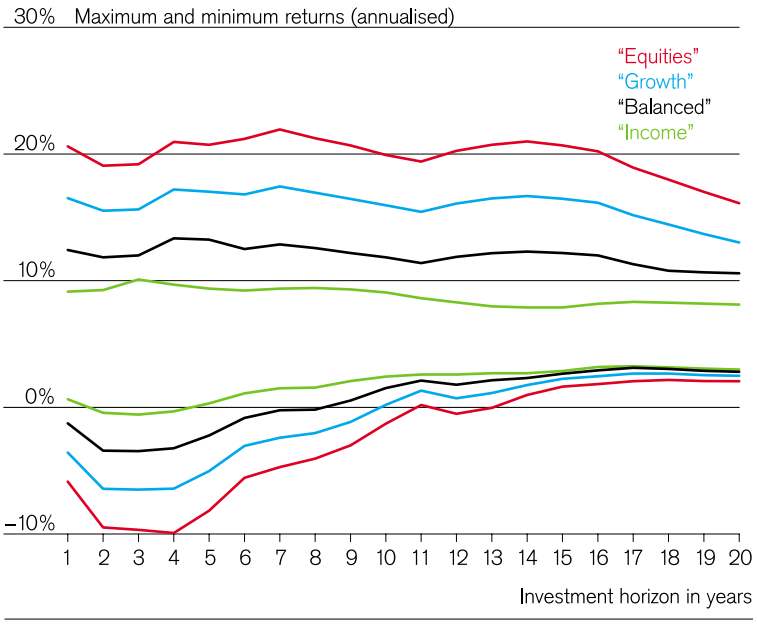


Figure 19: Investing regularly is more soothing on the nerves



respectively was required to exclude the risk of incurring a loss altogether. Investors who were willing and able to accept risk and who could have tolerated a certain degree of losses were therefore positioned in riskier strategies – in accordance with their investment horizons – that bit earlier than other investors. This boosted their expected return considerably. Whereas the minimum returns on long investment horizons show only minor differences across the different strategies, the maximum returns differ substantially. The potential return from the more risky strategies is much higher.

An investor who bought units for CHF 10 000 in the diversified equities portfolio in 1973 just prior to the big equity price tumble would have lost just CHF 5900 after two years. By investing at regular intervals, the loss incurred would have been restricted to less than CHF 2000. A period of just one year, rather than nine years, was necessary to make good all the losses incurred.

Investing in equities at regular intervals considerably reduces the risk of being fully invested from day one and immediately suffering a crash. However, we must remember that this cautious investment approach can occasionally lead to investors partially missing out on a boom, since some of their money will still be parked in a savings account waiting to be invested. Nonetheless, many investors may well be prepared to accept a slightly lower long-term return if this allows them to reduce the negative impact of major price falls, both in terms of its impact on their finances and their mental well-being. Many private investors simply throw in the towel at very unfavourable times. Often, they sell their stocks near to the lows of a downturn. Investing over time limits the risk of making the wrong decision at what turns out to be a bad time for the markets.

Regular investment may indeed be a true reflection of how most investors actually do behave. They save over a longer period of time and are only rarely in a position to make a substantial investment "at a stroke". Continually accumulating wealth in the course of one's working life is, in principle, little different from making regular investments. The benefits are also the same.

8. Conclusion

Now that the euphoria of the nineties has died down, it has become more and more necessary for investors to accept realistic investment goals. Despite the poor health of the stock markets since the beginning of 2000, we should not forget that crash and boom phases both come and go. We can see this if we look back at the history of the markets over the past 76 years. Achieving a good return while at the same time not losing one's nerve are only both possible with a consistent and disciplined investment strategy.

The persistent market downturn since 2000 is in many ways similar to other major crashes that have occurred since 1925. The massive jump in volatility and the losses suffered correspond to empirical historic values. When choosing their strategy, investors must take events of this nature into account. The mantra of the financial markets remains unchanged: the higher the desired return, the greater the level of price fluctuation that must be accepted. The acceptance of risk is, however, compensated financially: over the long term, the return on equity investments has exceeded the return on other investment categories by a great deal.

The art of successful investing includes minimising the damage incurred at times of major price declines. Three essential rules will help us here. Rule one: reduce the risk of losses by investing for a long time hori-

zon. Historically, there has never been a period of longer than 13 years in which Swiss equities put in a negative performance. And whereas a long time horizon will not eliminate all risks, it does reduce them considerably. Investors should therefore only use money that they do not need for a longer period of time when investing in stocks. Which is the correct mix of investments depends very much on the individual's investment horizon. A rule of thumb is: the longer the investment horizon, the bigger the equities quota.

Rule two: risk can be reduced by diversifying one's investments across many different markets. Not all markets move in parallel, which opens up diversification opportunities for investors. Returns are not fully correlated and go some way towards evening out the fluctuations in individual markets. This can help reduce the risk pertaining to a portfolio and at the same time boost the return in most cases.

Rule three: make investments over time. The capital is split into several slices and invested in successive stages. In the meantime, the remaining amount stays parked in a savings account. This is a strategy that eases the nerves and prevents investors from incurring substantial initial losses. It involves a slight reduction of the long-term return, but reduces the volatility of the return, especially in the first few years. This procedure corresponds to the real behaviour of many investors who progressively accumulate their assets over a longer time period.

If investors stick to these three basic rules, then in the majority of cases an investment in equities should be their number-one choice for an investment horizon of ten years or longer. Investors who are able, financially speaking, to live with the consequences of a major crash are also advised to invest in equities, even for a shorter investment horizon. Discipline and stamina are needed in implementing a soundly based investment strategy. This, in turn, allows the investor to remain calm and composed in the face of the unpredictable moods of the financial markets and leads over the longer term to the joyful outcome of having invested successfully.

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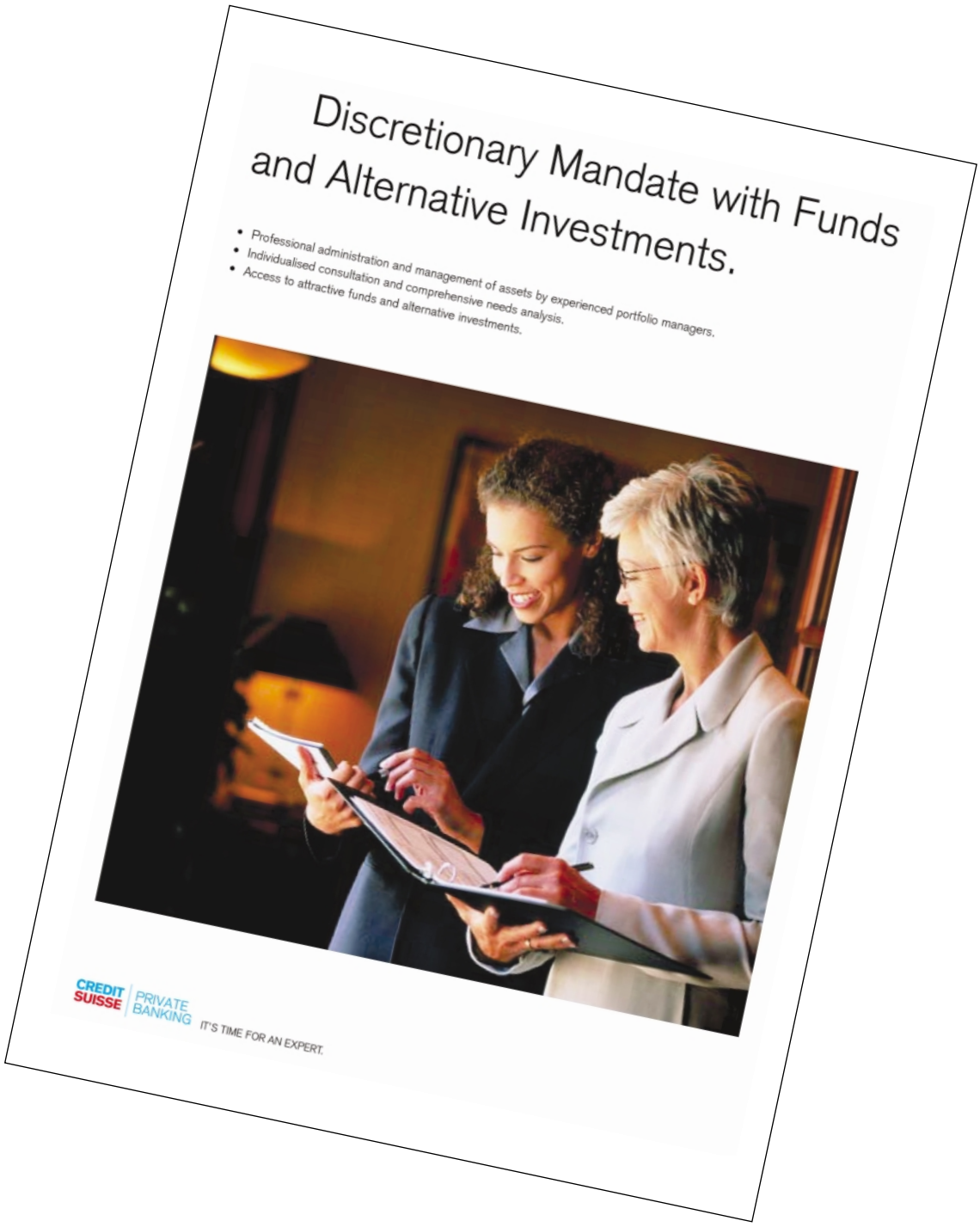

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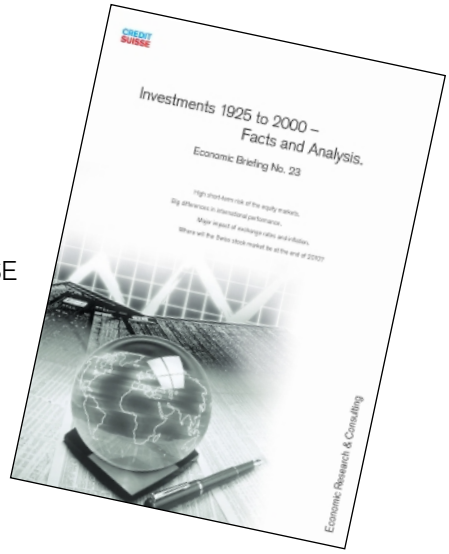

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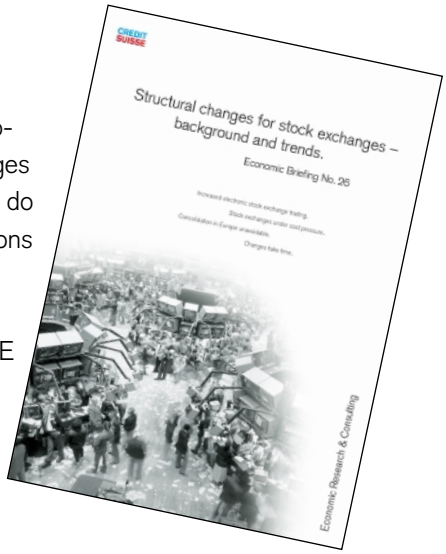

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