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Switzerland: A Financial Market History

Elroy Dimson, Paul Marsh, Mike Staunton

Introduction

The beginning of the new millennium saw a double-digit increase in global wealth rates – a development that came to a sudden halt with the onset of the 2008 financial crisis and which was followed by a decade of economic disruption and slowdown, along with significant geopolitical shifts. With new challenges on the rise, few of the past issues seem resolved – not only in relation to the future design of the financial sector, but also with regard to the key factors shaping the global economy. From the perspective of investors, the “new normal” comprising notably low returns and higher volatility continues to make stable, solidly performing markets both rare and appealing.

Drawing upon the global datasets of the Credit Suisse Research Institute’s annual Global Investment Returns Yearbook, the following report issued by the Credit Suisse Research Institute, our bank’s in-house think tank, revisits the past century of financial market performance. The authors, Professor Elroy Dimson of Cambridge Judge Business School and Professor Paul Marsh and Dr. Mike Staunton of the London Business School, present a distinct comparison between the 117-year performance of Switzerland and 22 selected markets, covering stocks, bonds and Treasury bills, as well as the development of the nations’ inflation rates and currencies. The results once again underline the long-term standing of Switzerland as the seventh-largest, albeit one of the world’s least-volatile equity markets, accounting for nearly 3% of total global equity value.

Over the period of our analysis, which spans 1900 to 2016, investors in Swiss assets saw both a robust performance and impressive long-term stability. An initial investment of CHF 1 in equities

(with dividends reinvested) would have grown 159 times in terms of purchasing power, which corresponds to an annualized real equity return of 4.4%. The purchasing power of an initial investment of CHF 1 would have grown 15.1 times for bonds and 2.5 times for bills. With regard to currency stability, the Swiss franc strengthened against the US dollar by 0.71% per year – in fact, every other currency in the 22 assessed countries depreciated against the Swiss franc over our 117-year evaluation period. Inflation is an important indicator for the long-term stability of an economy and a major aspect of investment returns. Also here, Switzerland can report the world’s lowest 117-year annualized inflation rate of just 2.2%, followed by the Netherlands and the USA.

The following pages aim to provide a comprehensive overview of the performance of the Swiss financial market, including key asset classes and economic indicators, over a time horizon much broader than typically seen elsewhere. We believe that Switzerland’s internationally leading position merits special attention from investors and underscores the need for key stakeholders to continue to engage, support and sustain the differentiating strengths of the Swiss economy, which have enabled such an impressive track record.

We hope that you find the trends and insights in this report valuable and wish you enjoyable reading.

Urs Rohner
Chairman of the Board of Directors
Credit Suisse Group AG



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Switzerland – a traditional safe haven

For a small country with just 0.1% of the world’s population and less than 0.01% 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) and is now the world’s seventh-largest equity market (after the USA, Japan, the United Kingdom, France, Germany and Canada), accounting for almost 3% of total world value. Since 1900, Swiss equities have achieved an annualized real return of 4.4%. Meanwhile, it has been one of the world’s best-performing government bond markets, with an annualized real return of 2.3%. The country has also had the world’s lowest 117-year inflation rate of just 2.2% per annum.

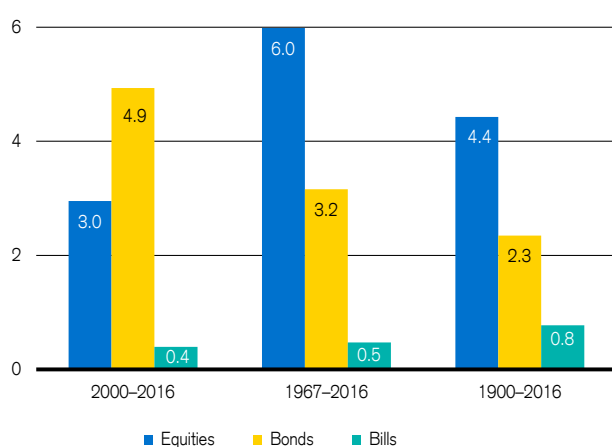
In this extract from the [Credit Suisse Global Investment Returns Yearbook 2017](#), we provide information on long-run returns in Switzerland, which is one of the world’s most important banking centers, and where private banking has been a major Swiss competence for over 300 years. Swiss neutrality, sound economic policy, low inflation and a strong currency have bolstered the country’s reputation as a safe haven. A large proportion of all cross-border private assets invested worldwide is still managed in Switzerland.

Switzerland’s pharmaceutical sector accounts for a third of the value of the FTSE Switzerland index. Nestle, Novartis, and Roche together account for over half of the index’s value.

In [Figures 1a and 1b](#) below, we report (in the left-hand chart) the annualized real returns on equities, bonds and Treasury bills (cash) over this century, the last 50 years, and since 1900; and (in the right-hand chart) the annualized premiums achieved over the latter two periods by equities relative to bonds and bills, by bonds relative to bills, and by the real exchange rate relative to the US dollar.

Figure 1a

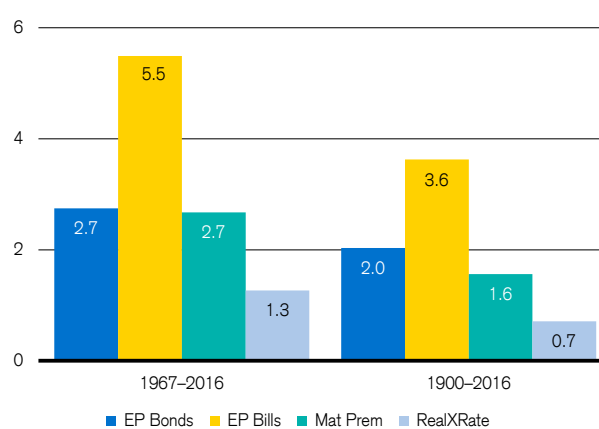
Annualized real returns on asset classes for Switzerland, 1900–2016 (%)



Note: Equities denotes the total return, including reinvested dividend income, on the equity market. Bonds denotes the total return, including reinvested coupons, on long-term government bonds. Bills denotes the total return, including income, from Treasury bills. All returns are adjusted for inflation and are expressed as geometric mean returns.

Figure 1b

Risk premiums for Switzerland, 1900–2016 (%)



Note: EP Bonds denotes the equity premium relative to long-term government bonds; EP Bills denotes the equity premium relative to Treasury bills; Mat Prem denotes the maturity premium for government bond returns relative to bill returns; and RealXRate denotes the real (inflation-adjusted) change in the exchange rate against the US dollar.

Source: Elroy Dimson, Paul Marsh, and Mike Staunton, [Triumph of the Optimists](#), Princeton University Press, 2002, and subsequent research

Long-run asset returns in Switzerland

Figure 2 shows the cumulative total return from stocks, bonds, bills, and inflation from 1900 to 2016 in Switzerland. Equities performed best, with an initial investment of CHF 1 growing to CHF 1,938 in nominal terms by end-2016. Long bonds and treasury bills gave lower returns, although they handsomely beat inflation. Their respective index levels at the end of 2016 are CHF 184 and CHF 30, with the inflation index ending at 12. The legend to Figure 2 shows the annualized returns. Equities returned 6.7% per year, versus 4.6% on bonds, 3.0% on bills, and inflation of 2.2% per year.

Inflation was a major force over the last 117 years, and we clearly need to adjust investment returns for changes in purchasing power. The blue bars in Figure 3 (on the next page) show inflation rates around the world from 1900 to 2016. They show that Switzerland had the world's lowest inflation rate, with the Netherlands and the USA being the runners-up. Switzerland's annualized inflation rate was 2.2% versus 2.9% for the USA. Thanks to the power of compounding, this apparently small difference meant that, while Swiss consumer prices rose by a factor of 12, US consumer prices rose 28-fold.

Switzerland's closest neighbors, France, Germany, Italy and Austria were all high inflation countries. Germany had the highest inflation rate with prices rising 209 billion percent in 1923. For this reason, the hyperinflationary period of 1922 to 1923 is omitted from our calculations of the long-

term (1900–2016) annualized inflation rate and annualized bond and bill returns for Germany. After Germany, Austria had the highest annualized inflation rate at 12.6%, with prices rising 1,082,325 times versus just 12 times for Switzerland.

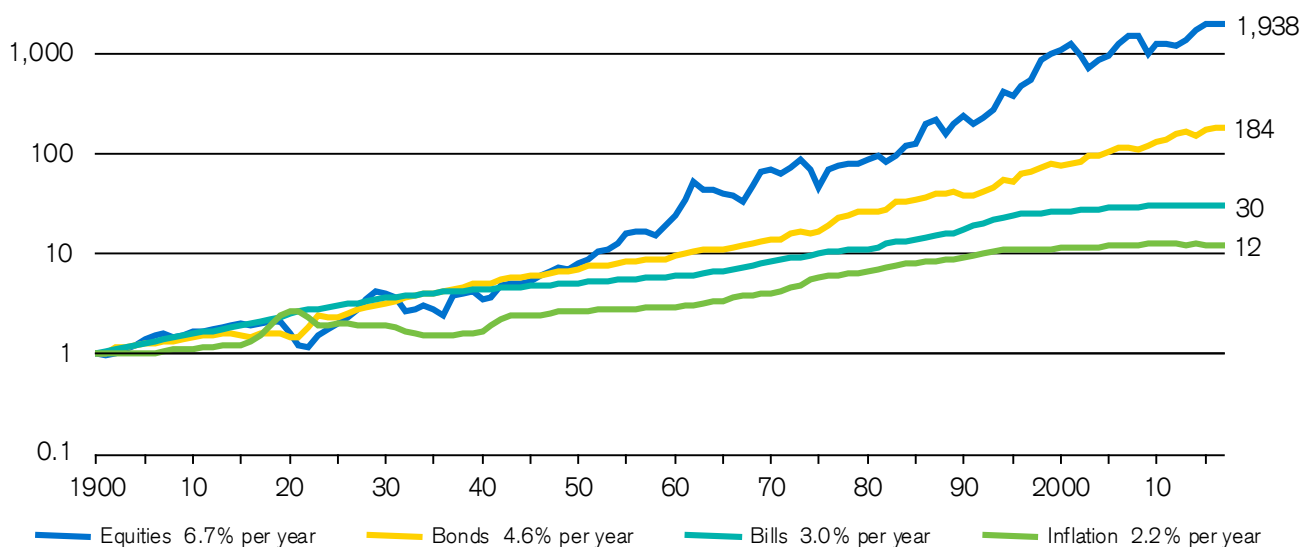
Private banking has been a major Swiss competence for over 300 years

The high inflation rates in many countries arose during or in the immediate aftermath of the two World Wars. In addition to examining inflation over the period from 1900 onward, we therefore also examine annualized rates of inflation from 1950 onward.

The database for the [Credit Suisse Global Investment Returns Yearbook](#) covers 23 countries from 1900 to the present time. The markets comprise two North American nations (Canada and the USA), ten Eurozone states (Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, and Spain), six European markets that are outside the euro area (Denmark, Norway, Russia, Sweden, Switzerland and the UK), four Asia-Pacific countries (Australia, China, Japan and New Zealand) and one African market (South Africa).

Figure 2

Cumulative returns on Swiss asset classes in nominal terms, 1900–2016



Source: Elroy Dimson, Paul Marsh, and Mike Staunton, [Triumph of the Optimists](#), Princeton University Press, 2002, and subsequent research

Table 1

Abbreviations for markets featured in charts below

Country	Abbreviation	Country	Abbreviation	Country/ Region	Abbreviation
Australia	Aus	Ireland	Ire	Spain	Spa
Austria	Aut	Italy	Ita	Sweden	Swe
Belgium	Bel	Japan	Jap	Switzerland	Swi
Canada	Can	The Nether-	Net	United King-	UK
Denmark	Den	New Zealand	NZ	United States	US
Finland	Fin	Norway	Nor	Europe	Eur
France	Fra	Portugal	Prt	World ex-USA	WxU
Germany	Ger	South Africa	Saf	World	Wld

Source: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research

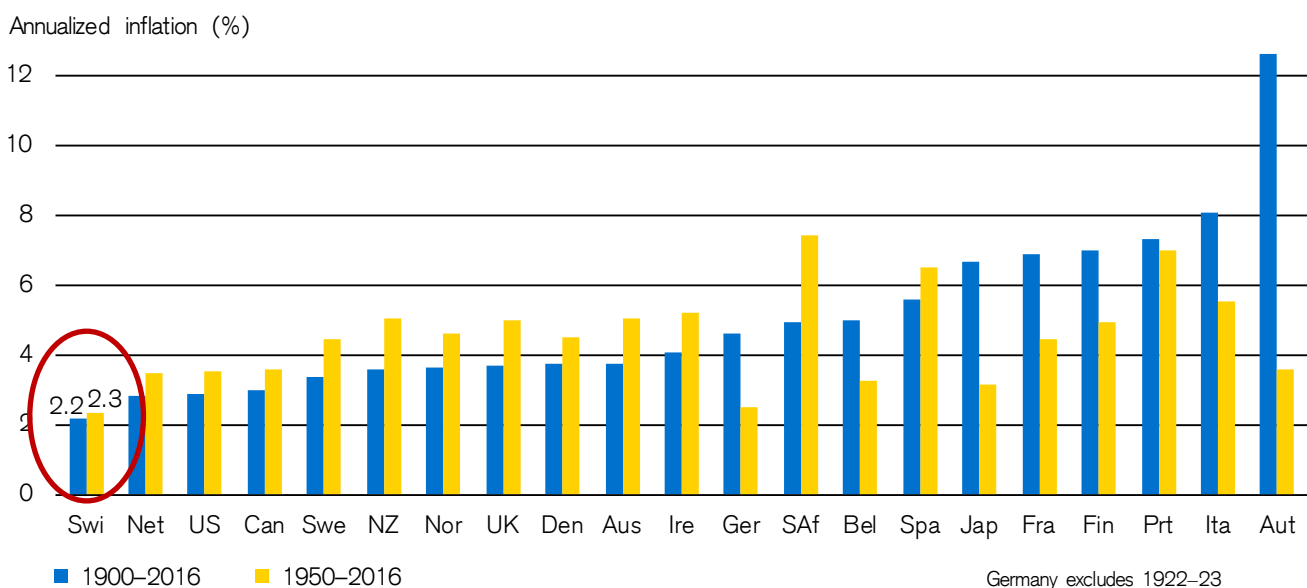
Equities performed best, with an initial investment of CHF 1 growing to CHF 1,938 in nominal terms by end-2016

In addition to the 23 national markets, we estimate regional indices. There is a 23-country world index, a 22-country world ex-US index, and a 16-country European index. For each region, there are stock and bond indices measured in US dollars and weighted by equity market capitalization and gross domestic product, respectively. Of the 23 national markets, 21 countries have an unbroken history. In Russia and China, investors in stocks and bonds suffered a total loss in 1917 and the late 1940s, respectively, following communist revolutions. To avoid survivorship bias, these losses are fully reflected in our world and regional indexes. These countries and regions provide an opportunity to compare Switzerland with other countries and regions. In our charts, we use three-character abbreviations for each market. The full list of markets and regions is in [Table 1](#).

The right-hand bars in [Figure 3](#) reveal that Switzerland also had the lowest inflation rate from 1950 onward, namely 2.3% per year. After experiencing the highest inflation of any country in the [Credit Suisse Global Investment Returns Yearbook](#) during the first half of the 20th century, Germany had the second-lowest inflation rate out of the 21 countries from 1950 onward.

[Figure 3](#) shows that several other countries, including the UK, moved in the opposite direction, from having comparatively low inflation to becoming relatively high inflation countries in the second half of the 20th century. In many countries, inflation peaked during the 1970s, and was gradually brought under control thereafter. Note that Russia and China are excluded from [Figure 3](#) as there are

Figure 3

Inflation rates around the world, 1900–2016 and 1950–2016

Source: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research

no reliable estimates of inflation during the periods of communist rule when stock and bonds markets were closed.

Since prices in Switzerland rose 12-fold over this period, it is helpful to examine Swiss asset returns in real (inflation adjusted) terms. Figure 4 shows the real returns on Swiss equities, bonds, and bills. Over the 117 years, an initial investment of CHF 1, with dividends reinvested, would have grown in purchasing power by 159 times, compared with 15.1 times for bonds and 2.5 times for bills. As the legend shows, these terminal wealth figures correspond to annualized real returns of 4.4% on equities, 2.3% on bonds, and 0.8% on bills.

Over the 117 years, an initial investment of CHF 1, with dividends reinvested, would have grown in purchasing power by 159 times

The green line in Figure 4 shows the real return from a Swiss index fund that paid out all of its income rather than reinvesting dividends. It plots real capital gains, and shows that the initial investment would have just tripled in purchasing power by start-2017, equivalent to a real capital gain of 0.9% per year. In Switzerland, as in every other Yearbook country, long-run returns were heavily

influenced by reinvested dividends and the real return on equities was mostly dividends.

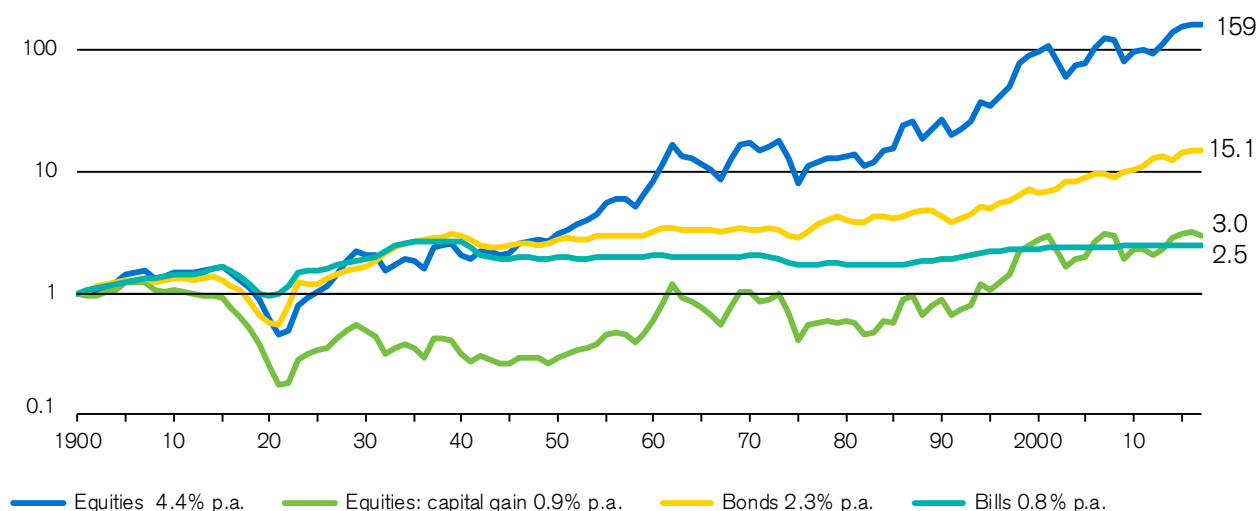
Table 2 (on the next page) summarizes the returns on Swiss asset classes over 1900–2016. For both nominal and real (inflation-adjusted) asset returns and for three risk-premium series, it shows the geometric and arithmetic mean return, the standard error of the arithmetic mean, the standard deviation and serial correlation of annual returns. Switzerland was one of the world's least volatile equity markets, with a standard deviation of real equity returns of 19.4%, the fourth lowest among our 21 countries with continuous histories. Canada was the least risky with a standard deviation of 17.0%, followed by Australia and New Zealand. Switzerland's bond market was the second least volatile, with a standard deviation of 9.4% per year. New Zealand had the least volatile bond market with a standard deviation of 9.0% per year.

Switzerland was one of the world's least volatile equity markets

Table 2 also shows the lowest and highest annual return, together with the dates in which these extremes occurred. Over the 117-year period, the lowest annual real equity return was -37.8% in 1974, while the highest was 59.4% in 1922. The worst annual real bond return was -21.4% in

Figure 4

Cumulative returns on Swiss asset classes in real terms, 1900–2016



Source: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research

Table 2

Returns on Swiss asset classes, 1900–2016

Return	Asset	Mean returns % p.a.					Annual returns %				10-year returns % p.a.			Current year rank	
		GM	AM	SE	SD	SC	Lowest		Highest		Lowest	Highest			
Nominal	Equities	6.7	8.3	1.7	18.8	0.11	-34.1	2008	61.4	1985	-4.2	1921	20.2	2000	89
	Bonds	4.6	4.7	0.6	6.0	0.12	-8.9	1919	28.4	1922	-0.5	1920	8.8	1930	91
	Bills	3.0	3.0	0.2	1.9	0.84	-0.9	2016	8.6	1990	0.4	2016	5.5	1994	117
	Inflation	2.2	2.3	0.5	5.1	0.71	-17.7	1922	25.7	1918	-3.5	1930	8.8	1919	96
Real	Equities	4.4	6.2	1.8	19.4	0.17	-37.8	1974	59.4	1922	-11.1	1920	18.2	2000	83
	Bonds	2.3	2.7	0.9	9.4	0.41	-21.4	1918	56.1	1922	-8.4	1920	12.7	1930	63
	Bills	0.8	0.9	0.4	4.9	0.68	-16.5	1918	25.8	1922	-3.8	1919	7.4	1930	94
	Exchange rate	0.7	1.3	1.0	11.1	0.08	-29.1	1936	51.6	1933	-4.0	1984	8.2	1978	94
Premiums	Equities vs. bills	3.6	5.3	1.7	18.6	0.12	-37.0	1974	54.8	1985	-8.5	1921	15.9	2000	79
	Equities vs. bonds	2.0	3.5	1.6	17.4	0.10	-41.3	2008	51.9	1985	-6.2	1921	13.7	1961	83
	Bonds vs. bills	1.6	1.7	0.6	6.2	0.19	-13.4	1919	24.1	1922	-5.0	1920	5.6	2011	39

GM=geometric mean; AM=arithmetic mean, SE=standard error of mean; SD=standard deviation; SC=serial correlation; 10-year returns to end of given year

Source: Elroy Dimson, Paul Marsh and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research.

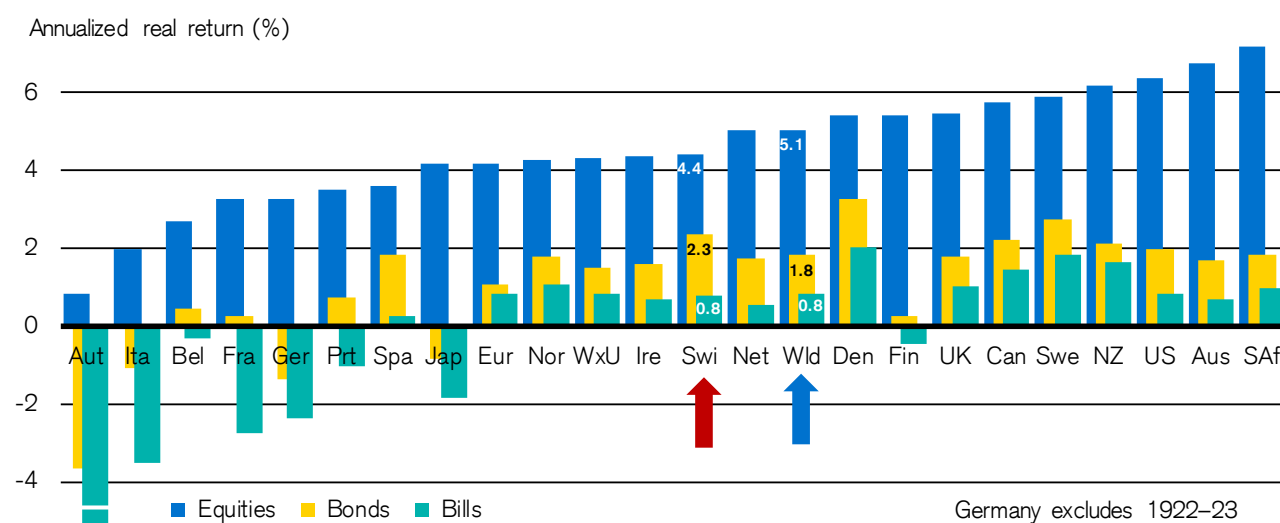
1918, while the best was 56.1% in 1922. The lowest annualized 10-year real equity return was -11.1% for the decade ending in 1920, while the best was 18.2% for the decade ending in 2000.

For bonds, the lowest annualized 10-year real return was -8.4% for the decade ending in 1920, while the best was 12.7% for the decade ending in 1930. Finally, Table 2 shows the rank of the most recent year's returns (where the highest return has rank 1, and the lowest return has rank 117). The current year (2016) had a rank of 117 for nominal

bill returns, indicating that in 2016, Switzerland experienced the lowest interest rates in its history. The rank of 83 for real equity returns and 63 for real bond returns shows that 2016 was the 83rd worst year for real equity returns, while it was the 63rd worst year for real bond returns.

Figure 5

Real annualized returns (%) on equities versus bonds and bills internationally, 1900–2016



Source: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research

Long-run Swiss asset returns in context

Figure 5 sets Swiss asset returns in context. It shows annualized real equity, bond, and bill returns over the last 117 years for the 21 continuous-history countries plus the world, the world ex-USA, and Europe, ranked in ascending order of equity market performance. The real equity return was positive in every location, typically 3%–6% per year. In all markets, equities were the best-performing asset, and bonds beat bills everywhere. This is what we would expect over the long haul, since equities are riskier than bonds, while bonds are riskier than cash.

Figure 5 shows that in terms of equity returns, Switzerland was a mid-ranking country, with an annualized Swiss franc real return of 4.4% that was just a little below the 5.1% on the world index, which is measured in US dollars. The Swiss annualized real bond return of 2.3% was the third highest after Denmark and Sweden. However, Danish bond returns are estimated from mortgage bonds over part of their history, and thus incorporate an element of reward for credit risk. In terms of pure government bonds, Switzerland thus ranks second after Sweden in Figure 5 (i.e. in local currency terms).

Figure 5 reports the real returns to a domestic investor, based on local purchasing power in that investor's home country. For example, over the period 1900–2016, the annualized real return to an American buying US equities was 6.4%, and for a Swiss investor buying Swiss equities it was 4.4%. However, when considering cross-border investment, we also need to account for exchange rate

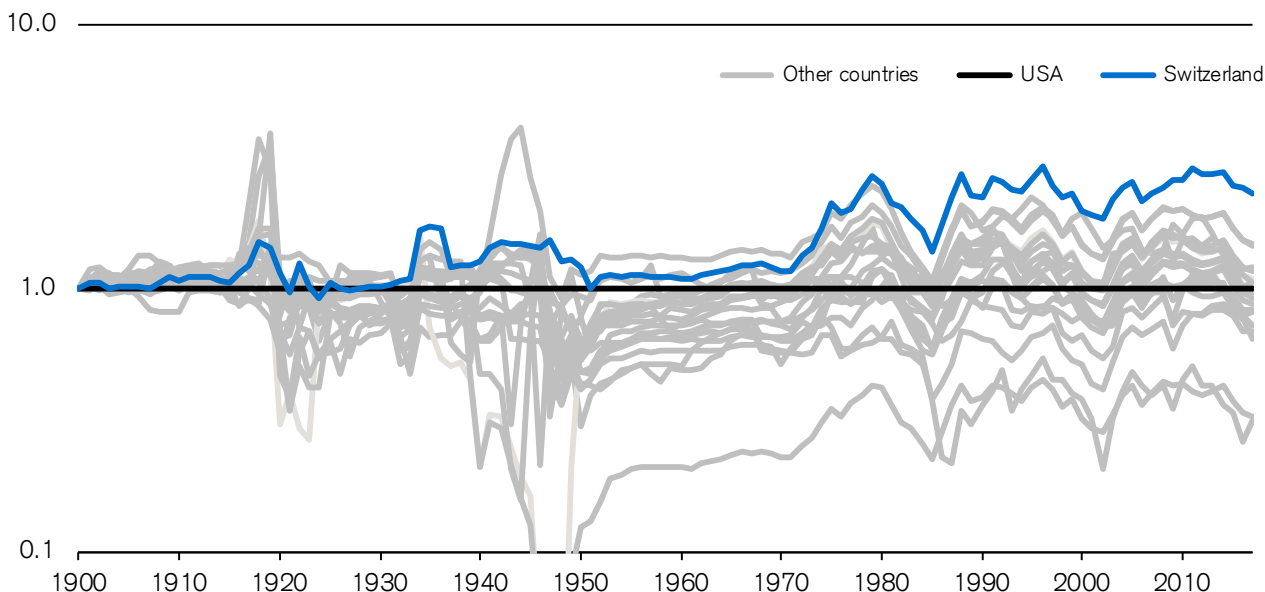
movements. Consider an American buying Swiss equities and a Swiss investor buying US equities. Each investor now has two exposures, one to foreign equities and the other to foreign currency. We need to convert the returns into each investor's reference currency.

Currency movements can be measured either in nominal or real terms. The inflation-adjusted, or real, exchange rate between two countries is defined as the nominal exchange rate multiplied by the ratio of the two countries' inflation indexes. There has been much debate about the extent to which exchange rates reflect inflation rates. An extreme view would be that purchasing power parity (PPP) holds absolutely. That is, currency-adjusted prices for goods and services are identical all over the world, and a unit of local currency should therefore have the same purchasing power in all countries. It is more common to focus on relative PPP, which asserts that an exchange rate will change to reflect movements in the two countries' price levels. This version of PPP asserts that the exchange rate change over an interval should be equal to the inflation differential over the same period.

Switzerland had the world's strongest currency over the last 117 years, both in nominal and real terms

Figure 6

Real (inflation-adjusted) exchange rate in US dollars per Swiss franc 1900–2016 (rebased to 1900=1)



Source: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research

If we assume that different countries' inflation indexes are based on the same basket of goods and services, and are measured accurately, then if relative PPP is maintained over the long haul, we would expect the real exchange rate to remain constant. Transportation costs, tariffs, trade restrictions, and product differentiation make the strictest version of PPP manifestly false. Nevertheless, at least over the long haul, the [Yearbook](#) shows that while nominal exchange rates have diverged enormously over time, real exchange rates have moved by far less. There is a clear tendency for high inflation currencies to devalue relative to currencies with lower inflation.

Switzerland had the world's strongest currency over the last 117 years, both in nominal and real terms. In [Figure 6](#), the real US dollar/franc exchange rate is plotted in blue, while other countries are in grey. Despite being the world's strongest currency, [Figure 6](#) shows that the annualized appreciation of the Swiss franc against the US dollar was quite modest at just 0.7%. [Figure 6](#) is consistent with purchasing power parity having been broadly maintained over the long run.

In common currency terms (in this case USD), Swiss equities actually outperformed the world index

As we know, most Swiss investors diversify their portfolios internationally. Instead of comparing domestic real returns as in [Figure 5](#), an alternative way of making cross-country comparisons is to translate all countries' returns into real returns in a common currency. To convert real returns in one currency into real returns in another, we simply adjust by the change in the real exchange rate.

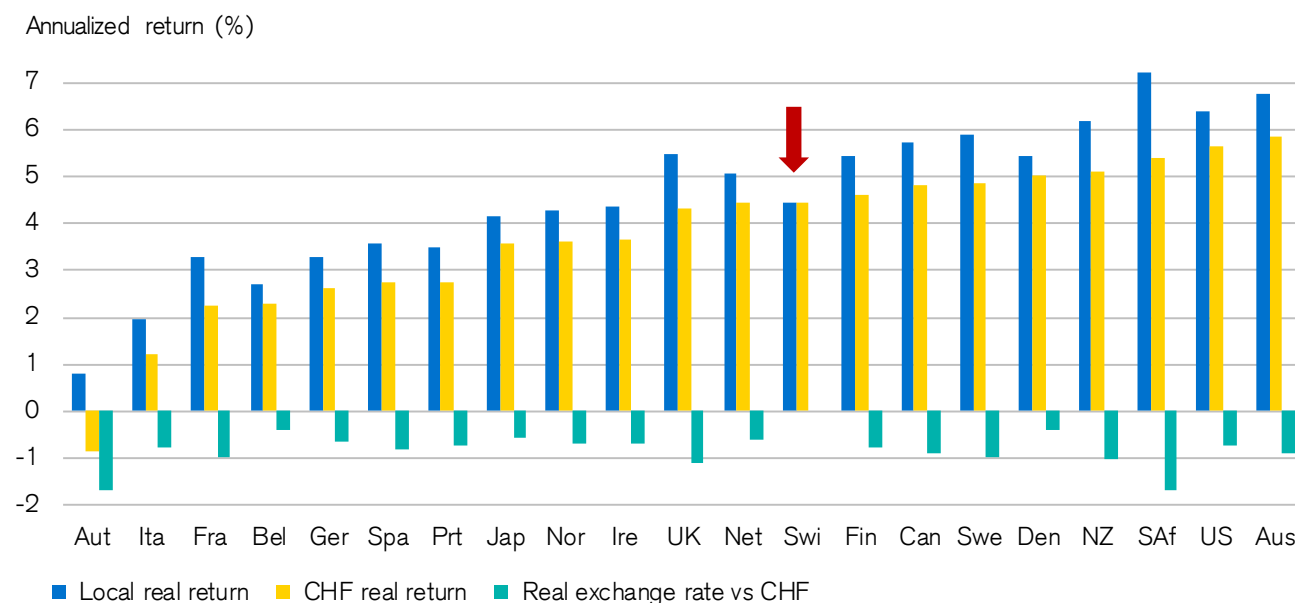
In the case of Switzerland over the last 117 years, the domestic real equity return was 4.4% per year and the real exchange rate movement against the USD was +0.71% per year. In other words, the Swiss franc strengthened against the US dollar by 0.71% per year after adjusting for the lower inflation rate in Switzerland as compared to the USA. Adding these components (geometrically) gives a real dollar return of 5.2%.

So for a US investor, the return from investing in Swiss equities was 5.2% per year in dollar terms. In [Figure 7](#), the world index is denominated in USD. So in common currency terms (in this case USD), Swiss equities actually outperformed the world index. This is contrary to the impression given by the analysis in local currency adjusted by local inflation, shown in [Figure 5](#).

Similarly, a US investor would have enjoyed a real USD return of 3.1% per year from Swiss bonds. While we noted above that Swiss bonds were in second place worldwide to Sweden in real, local currency terms, Swedish bonds had a real USD return of just 2.5% per year. In common currency terms, Swiss bonds were thus the world's best performers (provided we exclude Danish bonds with their credit risk element).

Figure 7

Real annualized equity returns (%) in local currency and Swiss francs, 1900–2016



Source: Elroy Dimson, Paul Marsh, and Mike Staunton, [Triumph of the Optimists](#), Princeton University Press, 2002, and subsequent research

For equity returns around the world, [Figure 7](#) shows the results from translating out of local currency and into the Swiss franc. The blue bars show the annualized real domestic currency returns from 1900 to 2016, as presented in [Figure 5](#).

The small turquoise bars, below the horizontal axis, depict the annualized real exchange rate movement over the same period. Since the Swiss franc was the world's best-performing currency, all the turquoise bars show negative values, as every currency depreciated against the Swiss franc. We need to deduct the currency impact (small turquoise bars) from the domestic real return (larger blue bars), which gives rise to the yellow bars. The yellow bars are common-currency returns, in real Swiss francs, from the Swiss investor's perspective.

The Swiss franc appreciated in real terms against every other currency. [Figure 7](#) shows that, consequently, Swiss investors experienced lower annualized real returns on equities in every other country, than the returns enjoyed in local currency terms by domestic investors in each of those countries.

Each currency in the 22 assessed countries depreciated against the Swiss franc



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The Swiss equity risk premium

Over the entire 117-year financial history of the Swiss equity market, there has never been an interval longer than 25 years during which cumulative real returns were negative. For the full 117 years, the annualized (geometric mean) Swiss equity risk premium relative to bills was 3.6%.

We measure the historical equity risk premium by taking the geometric difference between the equity return achieved over a period and the risk-free rate of return that was available over the same period. This measure of the risk premium is based on a ratio, and it therefore has no numeraire. It is unaffected by whether we compute returns in dollars or Swiss francs; or in nominal or in real terms. Our preferred benchmark for the risk-free return is treasury bills, i.e. very short-term, default-free, fixed-income government securities. However, many people also measure the equity premium

relative to long bonds, so we report both measures, even though bonds are clearly far from risk free in real terms.

Figure 8 shows the year-by-year Swiss historical risk premium relative to bills. This histogram shows not only the distribution of historical risk premiums, but also the precise years in which premiums of various magnitudes occurred.

The distribution of outcomes was wide, with the lowest and highest premiums being realized, as might be expected, in the worst and best years for stocks. The lowest premium was -37% in 1974,

Figure 8

Swiss equity risk premium relative to bills (%)



Source: Elroy Dimson, Paul Marsh and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research

while the highest was +55% in 1985. Figure 8 shows that, for Switzerland, the distribution of annual premiums is roughly symmetrical, broadly resembling a normal distribution. The arithmetic mean is 5.3% and the standard deviation is 18.6%. On average, therefore, Swiss investors received a positive reward for exposure to equity market risk.

Because the range of year-to-year premiums is very broad, it can be misleading to label these annual rewards as “risk premiums.” Investors clearly cannot have expected, let alone required, a negative risk premium from investing in equities, as otherwise they would simply have avoided them. All the negative and many of the very low premiums shown in Figure 8 must therefore reflect nasty surprises. Equally, investors could not have “required” the very high premiums, such as 55% in 1985. Such numbers are implausibly high as a required reward for risk, especially in a stable country like Switzerland. The high realizations must therefore reflect pleasant surprises. To avoid confusion, we should probably refer to these as “excess returns,” that is, as returns in excess of (or under) the risk-free interest rate.

To make sensible inferences about the historical risk premium, it is therefore necessary to look at much longer periods than a single year. Over longer horizons, we might expect good and bad luck to

cancel each other out. However, long needs to be very long indeed, as even over intervals of a decade or more, there can be major performance surprises. For example, there have been several lengthy periods when the realized Swiss risk premium was negative. Table 2 reports several examples.

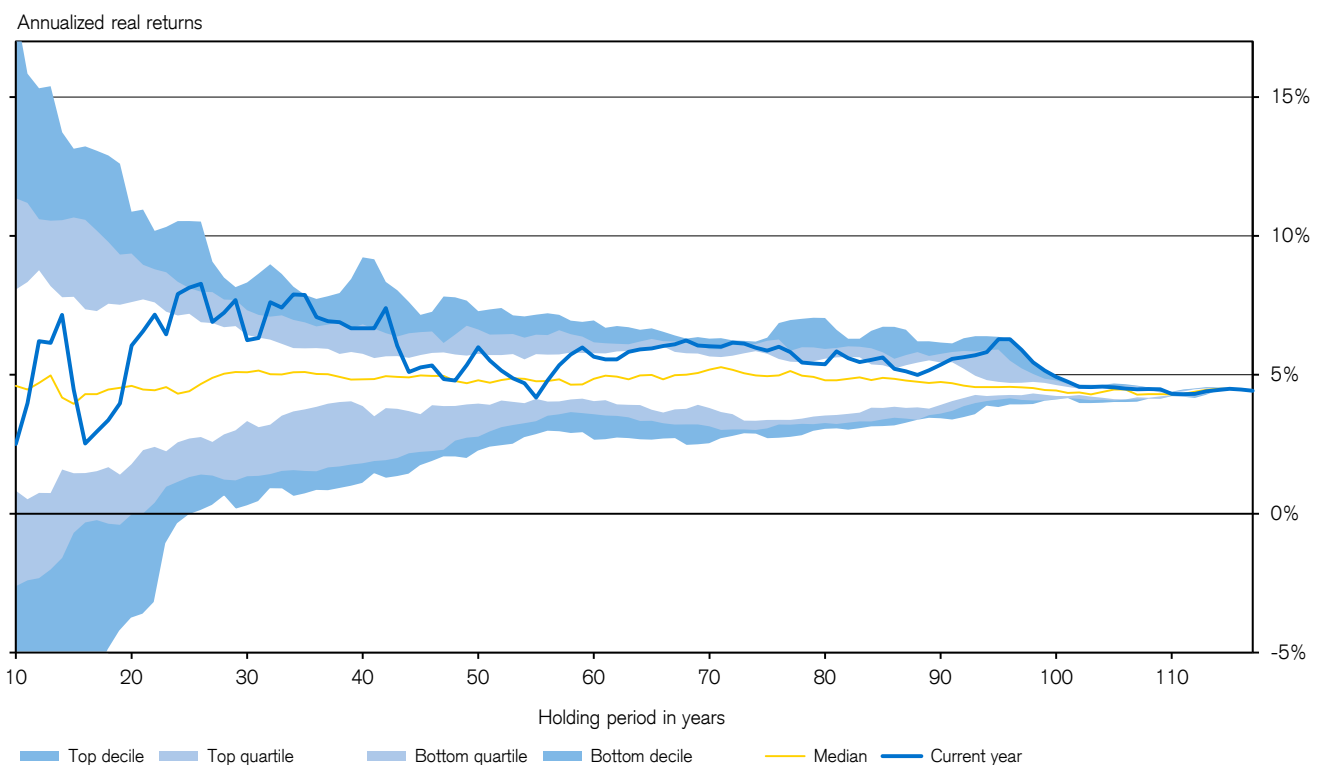
It follows that we need very long periods to infer investors' expectations about the reward for exposure to equity market risk. Even then, inference can be problematic, as we will see in Table 3. Over the full 117 years, the annualized (geometric mean) Swiss equity risk premium relative to bills was 3.6%. This is close to our estimate of 3%–3.5% for the forward looking equity premium on the world index (see the discussion in Chapter 2 of the [Global Investment Returns Yearbook](#)).

Dispersion of real returns on Swiss equities and bonds

The following two charts illustrate the historical dispersion of real returns in the Swiss financial markets. Figure 9 displays the dispersion of real equity returns while Figure 10 displays the dispersion of real bond returns. The vertical axis measures the real return, annualized over intervals of all possible length from 10 to 117 years. We depict the range of real returns that could be computed if data were used as at any year-end between 1909 and 2016.

Figure 9

Dispersion of real returns on Swiss equities over periods of 10–117 years



Source: Elroy Dimson, Paul Marsh and Mike Staunton, [Triumph of the Optimists](#), Princeton University Press, 2002, and subsequent research

The horizontal axis shows the number of years used to compute the real return. For instance, at the left-hand side of the chart, located against a holding period of ten years, is the range of 10-year real returns. This part of the chart embraces 108 estimates of the historical real return, where the latter is based on performance over the 10-year intervals 1900–09, 1901–10, and so on to 2006–15 and 2007–16.

The shaded areas run from the maximum (100th percentile) all the way down to the minimum (the 0th percentile) of the distribution of estimated real returns. The depth of the shading denotes five components of the distribution of returns. The top decile (the darker shaded area) represents favorable returns that occur one-tenth of the time. The top quartile (the lighter and darker shaded areas, taken together) represents favorable returns that occur one-fourth of the time.

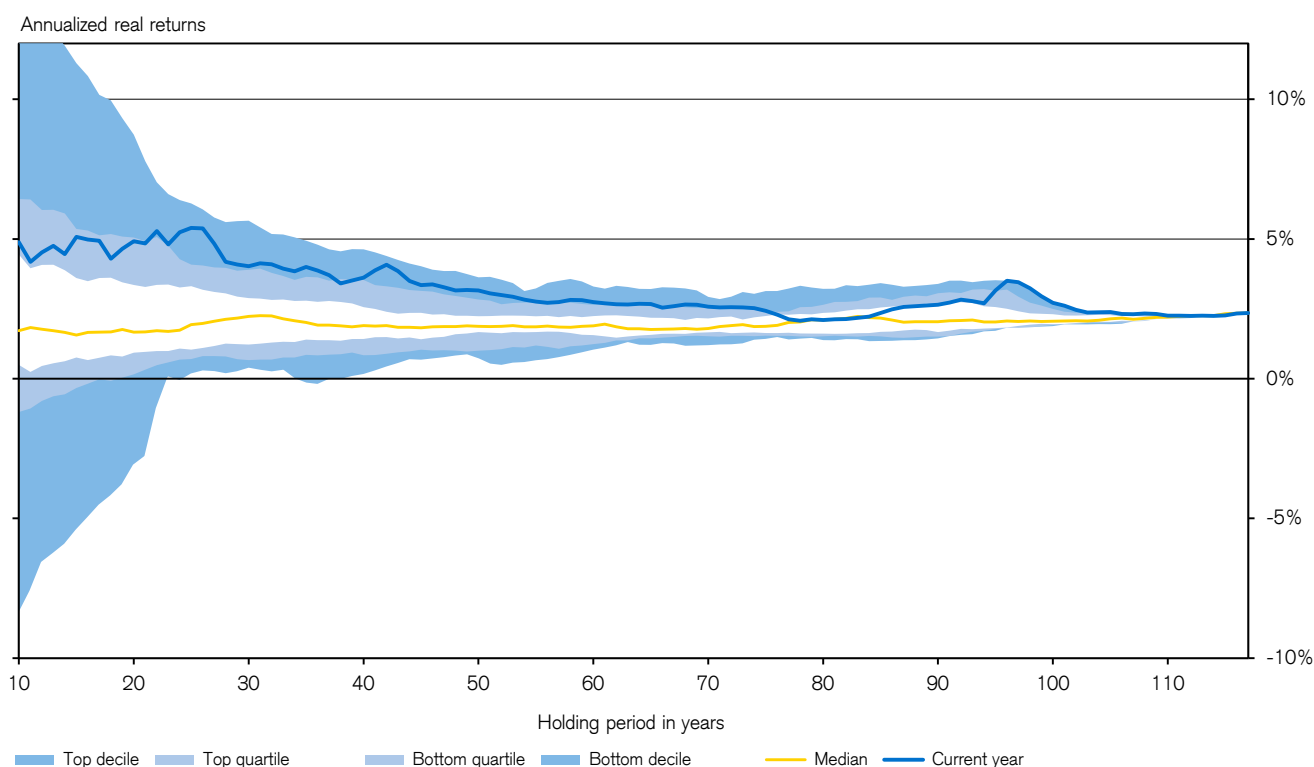
The interquartile range (the unshaded area in the middle of the chart) represents the middle half of the distribution of returns. The bottom quartile (the lighter and darker shaded areas, taken together) represents unfavorable returns that occur one-fourth of the time. The bottom decile (the darker shaded area) represents unfavorable returns that occur one-tenth of the time. The yellow line at the center of the interquartile range shows the median, which is outperformed or underperformed one-half

of the time. The thicker, blue line displays the returns for periods that conclude at the end of 2016.

Figure 9 shows that, over the entire 117-year financial history of the Swiss equity market, there has never been an interval longer than 25 years during which cumulative real returns were negative. The period with the most protracted negative real returns was the interval 1907–1931. For the United States, the longest period during which cumulative real returns were negative was the 16-year interval 1905–1920, and for the United Kingdom, the longest period during which cumulative real returns were negative was the 22-year interval 1900–1921. Seven countries had shorter intervals in which their stock market was underwater (in real terms), and 13 countries (15 if we include countries with a broken history) had been underwater for longer than Switzerland.

Figure 10

Dispersion of real returns on Swiss bonds over periods of 10–117 years



Source: Elroy Dimson, Paul Marsh and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research

Figure 10 presents comparable analysis for the Swiss government bond market. Provided a bond investor had a holding period of at least 23 years, there has been no interval since 1900 during which real returns were more than marginally negative. Furthermore, provided the investor had a holding period of at least 39 years, there has never been an interval during which real returns were ever negative. Every other country had by far longer intervals in which their bond market was underwater (in real terms) than Switzerland. Denmark, with an interval of 48 years, holds second position.

These estimates are based, of course, on index returns that ignore tax, transactions costs, and management fees, which are likely to drag down investment returns. On the other hand, a prudent investor should focus on risk diversification. She should hold a multi-asset, multi-national portfolio, managed tax-efficiently and at low cost. Such strategies mitigate the downside risk of investing in the capital market.



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Swiss index values and asset returns

The analyses presented above draw on the DMS (Dimson-Marsh-Staunton) database that underpins the [Credit Suisse Global Investment Returns Yearbook](#). The DMS data is distributed for the authors by Morningstar. However, it may be helpful to present a brief overview of the Swiss data. [Table 3](#) lists index levels and returns for all the Swiss asset series in nominal and real terms. In this table, index values are provided at intervals of one decade from 1900 to 2010, and then annually from start-2015. We also list percentage returns for each complete year since 2004. [Table 3](#) provides confirmation of some of the numbers plotted in our charts and cited above. For example, the row headed 2017 shows the level of the real return indexes at the start of 2017: 159 for equities with dividends reinvested, and 15.1 for bonds with income reinvested (see [Figure 4](#)), and the real exchange rate (rebased to start at 1) of 2.29 (see [Figure 6](#)).

Swiss asset returns and premia by decades

[Table 4](#), on the next page, provides “return triangles” of the annualized real returns on each of the principal asset categories (as well as real equity capital gains), the three premiums relating to equities, bonds, and bills, real and nominal exchange rates against the dollar, plus the annualized inflation rate. These returns span all multiples of a decade from one to twelve decades, including the (partial) decade we are in at present.

The “triangles” table presents returns over individual decades, and returns to date from an initial investment made at the start of 1900, 1910, and so on to the end of 2016. The triangles are divided into two groups of five. The five lower (unshaded) triangular tables on the left are read from top to bottom; for instance, the annualized real return for Swiss equities from start-1910 to start-1930 was 1.7%. The five upper (shaded) triangular tables on the right are read from left to right; for instance, the annualized equity premium versus bonds during 1910–1970 was 2.6%.

Table 3

Swiss index values and annual returns from start-1900 to start-2017

Start of	Equity returns		Bond returns		Bill returns		Equity premiums		Maturity premium	Inflation	Exch. rate vs. USD	
	Nominal	Real	Nominal	Real	Nominal	Real	vs. bonds	vs. bills			Nominal	Real
1900	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1910	1.66	1.47	1.49	1.32	1.58	1.40	1.11	1.05	0.94	1.13	1.03	1.05
1920	1.62	0.61	1.48	0.56	2.49	0.94	1.10	0.65	0.59	2.64	0.96	1.14
1930	3.97	2.06	3.21	1.67	3.63	1.88	1.24	1.09	0.89	1.93	1.05	1.01
1940	3.47	2.05	5.07	2.99	4.42	2.61	0.69	0.78	1.15	1.69	1.21	1.26
1950	7.94	3.02	7.12	2.71	5.13	1.95	1.12	1.55	1.39	2.63	1.25	1.19
1960	24.23	8.16	9.60	3.23	6.00	2.02	2.52	4.04	1.60	2.97	1.25	1.08
1970	70.12	17.21	13.57	3.33	8.29	2.03	5.17	8.46	1.64	4.08	1.24	1.15
1980	88.27	13.34	26.01	3.93	11.11	1.68	3.39	7.94	2.34	6.62	3.37	2.49
1990	241.75	26.27	38.89	4.23	17.22	1.87	6.22	14.04	2.26	9.20	3.49	2.18
2000	1101.75	96.99	75.64	6.66	26.20	2.31	14.57	42.06	2.89	11.36	3.36	1.94
2010	1218.28	97.83	129.12	10.37	30.53	2.45	9.44	39.90	4.23	12.45	5.20	2.57
2015	1919.29	155.49	173.52	14.06	30.58	2.48	11.06	62.76	5.67	12.34	5.41	2.44
2016	1973.04	161.96	180.53	14.82	30.32	2.49	10.93	65.08	5.95	12.18	5.43	2.40
2017	1938.12	159.11	183.90	15.10	30.04	2.47	10.54	64.52	6.12	12.18	5.29	2.29
Annual returns												
2004	6.8%	5.4%	9.0%	7.6%	0.4%	-0.9%	-2.0%	6.4%	8.6%	1.3%	8.8%	6.7%
2005	35.5%	34.2%	9.5%	8.4%	0.7%	-0.3%	23.8%	34.6%	8.7%	1.0%	-13.7%	-15.7%
2006	20.6%	19.9%	-2.0%	-2.6%	1.3%	0.7%	23.1%	19.0%	-3.3%	0.6%	8.0%	5.9%
2007	0.0%	-2.0%	-4.7%	-6.5%	2.4%	0.4%	4.9%	-2.4%	-6.9%	2.0%	7.8%	5.7%
2008	-34.1%	-34.5%	12.3%	11.5%	2.8%	2.1%	-41.3%	-35.8%	9.2%	0.7%	6.4%	7.0%
2009	23.0%	22.7%	6.4%	6.1%	0.5%	0.2%	15.6%	22.4%	5.9%	0.3%	3.0%	0.5%
2010	2.8%	2.2%	7.8%	7.2%	0.2%	-0.3%	-4.6%	2.6%	7.6%	0.5%	10.9%	9.8%
2011	-7.6%	-6.9%	13.6%	14.4%	0.3%	1.0%	-18.7%	-7.9%	13.3%	-0.7%	-0.3%	-3.9%
2012	17.7%	18.2%	3.2%	3.7%	0.0%	0.4%	14.0%	17.7%	3.3%	-0.4%	2.2%	0.0%
2013	24.7%	24.6%	-6.6%	-6.7%	-0.2%	-0.2%	33.5%	24.9%	-6.5%	0.1%	2.9%	1.5%
2014	13.1%	13.4%	13.9%	14.3%	-0.1%	0.2%	-0.7%	13.2%	14.0%	-0.3%	-10.5%	-11.4%
2015	2.8%	4.2%	4.0%	5.4%	-0.9%	0.5%	-1.2%	3.7%	4.9%	-1.3%	0.3%	-1.7%
2016	-1.8%	-1.8%	1.9%	1.9%	-0.9%	-0.9%	-3.6%	-0.9%	2.8%	0.0%	-2.6%	-4.6%

Source: Elroy Dimson, Paul Marsh and Mike Staunton, [Triumph of the Optimists](#), Princeton University Press, 2002, and subsequent research

Table 4

Swiss real rates of return, inflation and premiums over various periods from start-1900 to start-2017

	1 Jan	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2017	
Real equity total returns	1900		1.1	0.5	0.7	-0.9	0.2	1.6	2.4	1.5	2.1	2.7	2.1	2.0	Equity premium vs. bonds
	1910	3.9		-0.2	0.5	-1.6	0.0	1.7	2.6	1.6	2.2	2.9	2.2	2.1	
	1920	-2.4	-8.3		1.2	-2.3	0.1	2.1	3.1	1.9	2.5	3.3	2.4	2.4	
	1930	2.4	1.7	12.9		-5.7	-0.5	2.4	3.6	2.0	2.7	3.6	2.6	2.5	
	1940	1.8	1.1	6.2	-0.1		5.0	6.7	7.0	4.1	4.5	5.2	3.8	3.6	
	1950	2.2	1.8	5.5	1.9	4.0		8.5	8.0	3.8	4.4	5.3	3.6	3.4	
	1960	3.6	3.5	6.7	4.7	7.2	10.4		7.4	1.5	3.0	4.5	2.7	2.5	
	1970	4.1	4.2	6.9	5.4	7.3	9.1	7.7		-4.1	0.9	3.5	1.5	1.5	
	1980	3.3	3.2	5.3	3.8	4.8	5.1	2.5	-2.5		6.2	7.6	3.5	3.1	
	1990	3.7	3.7	5.5	4.3	5.2	5.6	4.0	2.1	7.0		8.9	2.1	2.0	
	2000	4.7	4.8	6.5	5.7	6.6	7.2	6.4	5.9	10.4	14.0		-4.2	-1.9	
	2010	4.3	4.3	5.8	4.9	5.7	6.0	5.1	4.4	6.9	6.8	0.1		1.6	
	2017	4.4	4.5	5.9	5.1	5.8	6.1	5.3	4.8	6.9	6.9	3.0	7.2		
Real equity capital gains	1900		0.5	-2.1	0.3	-0.6	0.9	2.4	3.1	2.6	3.0	3.8	3.4	3.6	Equity premium vs. bills
	1910	0.5		-4.7	0.2	-1.0	1.0	2.7	3.5	2.9	3.3	4.2	3.7	3.9	
	1920	-6.7	-13.3		5.3	0.9	2.9	4.7	5.3	4.3	4.5	5.3	4.7	4.9	
	1930	-2.4	-3.8	6.7		-3.3	1.7	4.4	5.2	4.0	4.3	5.4	4.6	4.8	
	1940	-2.9	-3.9	1.1	-4.2		7.0	8.5	8.2	6.0	5.9	6.9	5.8	5.9	
	1950	-2.4	-3.1	0.5	-2.4	-0.6		10.1	8.9	5.6	5.7	6.8	5.6	5.7	
	1960	-0.9	-1.2	2.1	0.6	3.2	7.1		7.7	3.4	4.2	6.0	4.7	5.0	
	1970	0.0	-0.1	2.8	1.9	4.0	6.4	5.6		-0.6	2.6	5.5	4.0	4.4	
	1980	-0.7	-0.8	1.4	0.4	1.6	2.3	0.0	-5.4		5.9	8.7	5.5	5.8	
	1990	-0.1	-0.2	1.8	1.0	2.1	2.8	1.4	-0.6	4.4		11.6	5.4	5.8	
	2000	1.0	1.1	3.0	2.5	3.7	4.6	3.9	3.4	8.0	11.8		-0.5	2.5	
	2010	0.7	0.8	2.5	1.9	2.9	3.5	2.7	2.0	4.6	4.8	-1.9		7.1	
	2017	0.9	1.0	2.6	2.1	3.0	3.5	2.9	2.3	4.5	4.6	0.5	4.0		
Real bonds	1900		-0.6	-2.6	-0.4	0.3	0.7	0.8	0.7	1.1	0.9	1.1	1.3	1.6	Bond maturity premium
	1910	2.8		-4.5	-0.3	0.7	1.0	1.1	0.9	1.3	1.1	1.3	1.5	1.8	
	1920	-2.9	-8.2		4.1	3.3	2.9	2.5	2.0	2.3	1.9	2.0	2.2	2.4	
	1930	1.7	1.2	11.5		2.6	2.3	2.0	1.5	2.0	1.6	1.7	2.0	2.2	
	1940	2.8	2.8	8.7	6.0		1.9	1.7	1.2	1.8	1.4	1.6	1.9	2.2	
	1950	2.0	1.8	5.4	2.5	-1.0		1.4	0.8	1.8	1.2	1.5	1.9	2.2	
	1960	2.0	1.8	4.5	2.2	0.4	1.8		0.2	1.9	1.2	1.5	2.0	2.4	
	1970	1.7	1.6	3.6	1.7	0.4	1.0	0.3		3.6	1.6	1.9	2.4	2.8	
	1980	1.7	1.6	3.3	1.7	0.7	1.2	1.0	1.7		-0.4	1.1	2.0	2.6	
	1990	1.6	1.5	2.9	1.6	0.7	1.1	0.9	1.2	0.7		2.5	3.2	3.8	
	2000	1.9	1.8	3.1	2.0	1.3	1.8	1.8	2.3	2.7	4.7		3.9	4.5	
	2010	2.1	2.1	3.3	2.3	1.8	2.3	2.4	2.9	3.3	4.6	4.5		5.4	
	2017	2.3	2.3	3.5	2.6	2.1	2.6	2.7	3.3	3.7	4.8	4.9	5.5		
Real bills	1900		1.3	5.0	2.2	1.3	2.0	1.8	2.0	2.4	2.5	2.5	2.3	2.2	Inflation
	1910	3.4		8.8	2.7	1.3	2.1	1.9	2.2	2.6	2.7	2.6	2.4	2.2	
	1920	-0.3	-3.8		-3.1	-2.2	0.0	0.3	0.9	1.5	1.8	1.8	1.7	1.6	
	1930	2.1	1.5	7.1		-1.3	1.6	1.5	1.9	2.5	2.6	2.6	2.4	2.1	
	1940	2.4	2.1	5.2	3.3		4.5	2.8	3.0	3.5	3.4	3.2	2.9	2.6	
	1950	1.3	0.8	2.5	0.2	-2.9		1.2	2.2	3.1	3.2	3.0	2.6	2.3	
	1960	1.2	0.7	1.9	0.2	-1.3	0.3		3.2	4.1	3.8	3.4	2.9	2.5	
	1970	1.0	0.6	1.5	0.2	-0.8	0.2	0.1		5.0	4.2	3.5	2.8	2.4	
	1980	0.6	0.3	1.0	-0.2	-1.1	-0.5	-0.9	-1.9		3.4	2.7	2.1	1.7	
	1990	0.7	0.4	1.0	0.0	-0.7	-0.1	-0.3	-0.4	1.1		2.1	1.5	1.0	
	2000	0.8	0.6	1.1	0.3	-0.2	0.3	0.3	0.4	1.6	2.1		0.9	0.4	
	2010	0.8	0.6	1.1	0.3	-0.1	0.4	0.4	0.5	1.3	1.4	0.6		-0.3	
	2017	0.8	0.5	1.0	0.3	-0.1	0.3	0.3	0.4	1.0	1.0	0.4	0.1		
Real exchange rate vs. USD	1900		0.3	-0.2	0.1	0.5	0.4	0.4	0.3	1.5	1.4	1.2	1.5	1.4	Exchange rate vs. USD
	1910	0.5		-0.7	0.1	0.6	0.5	0.4	0.3	1.7	1.5	1.3	1.6	1.5	
	1920	0.7	0.8		0.9	1.2	0.9	0.7	0.5	2.1	1.9	1.6	1.9	1.8	
	1930	0.0	-0.2	-1.3		1.5	0.9	0.6	0.4	2.4	2.0	1.7	2.0	1.9	
	1940	0.6	0.6	0.5	2.3		0.3	0.1	0.1	2.6	2.1	1.7	2.1	1.9	
	1950	0.4	0.3	0.1	0.9	-0.6		0.0	0.0	3.4	2.6	2.0	2.4	2.2	
	1960	0.1	0.0	-0.1	0.2	-0.8	-1.0		0.0	5.1	3.5	2.5	2.9	2.6	
	1970	0.2	0.1	0.0	0.3	-0.3	-0.2	0.7		10.5	5.3	3.4	3.6	3.1	
	1980	1.1	1.2	1.3	1.8	1.7	2.5	4.3	8.0		0.3	0.0	1.5	1.2	
	1990	0.9	0.9	0.9	1.3	1.1	1.5	2.4	3.2	-1.3		-0.4	2.0	1.6	
	2000	0.7	0.7	0.7	0.9	0.7	1.0	1.5	1.8	-1.2	-1.1		4.5	2.7	
	2010	0.9	0.9	0.9	1.2	1.0	1.3	1.8	2.0	0.1	0.8	2.8		0.2	
	2017	0.7	0.7	0.7	1.0	0.8	1.0	1.3	1.5	-0.2	0.2	1.0	-1.7		

Source: Elroy Dimson, Paul Marsh and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research



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Appendix

Credit Suisse Global Investment Returns Yearbook 2017

The [Credit Suisse Global Investment Returns Yearbook](#) is a long-run study covering 117 years of investment returns since 1900 in all the main asset categories in 23 countries and the world. With the unrivalled quality and breadth of its database, the Yearbook is the global authority on the long-run performance of stocks, bonds, Treasury bills, inflation and currencies. The Yearbook is produced in conjunction with Elroy Dimson, Paul Marsh and Mike Staunton, recognized as the leading authorities on the analysis of the long-run performance and trends of global asset classes.

In this extract from the [Yearbook](#), we provide information on long-run returns in Switzerland, one of the world's most important financial centers, and the home of Credit Suisse.

Data sources

We use the series spliced together by Wydler (1989, 2001) and extra data provided by Wälchli and Steiner (personal communication, 2002). We created an equally weighted index of Swiss equity prices for 1900–10; this used the series of annual prices and dividend yields collected from *Neue Zürcher Zeitung*, with an average of 66 year-end stock prices over the period. Over 1911–25, we use the index of 21 industrial shares from the *Statistisches Jahrbuch*. The Swiss exchanges were closed during September 1914 to December 1915, so that, for end-1914 and end-1915, we use the index at the date closest to the year-end. For 1926–59, Rätzer (1983) estimates total returns. For 1960–83, Huber (1985) computes the returns from index levels and dividends on the SBC index. Over 1984–98, we use the Pictet return index, and then the Swiss All Share index.

For Swiss bond returns over 1900–25, we use data from Tartler (2007). This was a change in 2011, since we previously had estimated bond returns from the short rate. The 1926–59 interval employs Rätzer's (1983) estimates based on redemption yields for new Swiss bond issues. The 1960–80 period is represented by Huber's (1985) bond index based on actual trading prices. From 1981, we use the Datastream 10-year Swiss government bond index. Starting in 1990, we switch to the Citi GBI 10+ years total returns index.

During 1900–55, short-term rates are represented by the central bank discount rate and, for 1956–79, by the return on three-month time deposits. From 1980 onward, we use the return on Treasury bills.

Nominal returns are adjusted for inflation using movements in the Swiss consumer prices index. Details on non-Swiss data sources are provided in Dimson, Marsh, and Staunton (2002, 2007, 2017).

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Elroy Dimson, Paul Marsh, and Mike Staunton jointly wrote the influential investment book, [Triumph of the Optimists](#), published by Princeton University Press. They have authored the [Global Investment Returns Yearbook](#) annually since 2000. They distribute the [Yearbook](#)'s underlying dataset through Morningstar Inc. The authors also edit and produce the [Risk Measurement Service](#), which London Business School has published since 1979. They each hold a PhD in Finance from London Business School.

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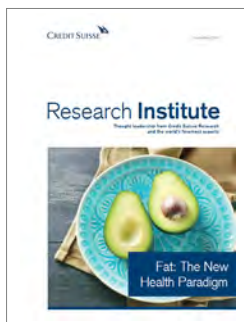
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