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Pension funds: the value of equity overlay

Thanks to the asymmetry created by portfolio insurance strategies, systematic application of equity overlays would have allowed pension funds to consider higher equity exposures without having to accept significantly higher risk.

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The past fifteen years have been difficult for risky assets such as equities, in particular those from developed markets. Swiss pension funds have thus been rather poorly rewarded for taking on risk, which would argue in favor of higher exposures to fixed-income investments. Thanks to the asymmetry created by portfolio insurance strategies, however, systematic application of an equity overlay to stocks from developed markets would have allowed those institutional investors to consider higher equity exposures without having to accept significantly greater risk.

Under a context characterized by a worldwide historical decrease in interest rates going along with a substantial appraisal of the Swiss franc against the main foreign currencies, equity performance was much less attractive than that of bonds in the fifteen-year from 1998 to 2012. Foreign equities (without currency hedging) posted a gain of 2.2% p.a. in the benchmarks for occupational pension funds in Switzerland – the Pictet LPP indices – whereas foreign-currency bonds (with full currency hedging) gained 3.8% p.a. While the attitude towards exchange-rate risk clearly explains part of this difference for assets denominated in foreign currency, there is also a noticeable difference between the gains made by Swiss equities (3.2% p.a.) and bonds issued in Swiss francs (3.6% p.a.).

Moreover, if we consider the modest performance of the private equity index (entering the benchmarks without currency hedging), it is hardly surprising that risk-taking did not really pay off during the period in question. The table on the next page shows that an "LLP-25 plus" profile (20% equities, 2.5% hedge funds, 2.5% private equity) gained 3.9% p.a. with a volatility of 4.5% (based on bimonthly data). A "LPP-40 plus" allocation (30% equities, 5% hedge funds, 5% private equity) was barely more profitable, returning 4% p.a., but with a volatility of 7.2%. A "LPP-60 plus" profile (45% equities, 7.5% hedge funds, 7.5% private equity), meanwhile, unsurprisingly returned 3.7% p.a. with a volatility of 10.8%.

The dotcom bubble and its correction, then the 2008-2009 financial crisis, triggered such pronounced bear markets in equities that pension funds' risk can no longer be assessed solely in terms of the volatility to which a given strategic allocation is exposed. In fact, it is crucial to look at the maximum drawdowns of the various allocations and at the underfunding that may result from these. This has clearly led to a growing interest in the different techniques for hedging risks, notably portfolio insurance strategies.

Among those strategies, Constant Proportion Portfolio Insurance (CPPI) has experienced significant expansion. It is now being applied more widely, encompassing not only currency overlays to manage exchange-rate risk, but also equity overlays to manage stock-market risk. It has also evolved over time, becoming less focused on the imperative protection of a fixed investment floor and seeking instead to favor the creation of genuine asymmetry in order to offer substantial downside protection while leaving the upside participation as open as possible. This is achieved in particular by maintaining a minimum level of exposure to the risky underlying asset and by having available an additional risk budget

> These strategic allocations also make it possible to expect higher returns

that can be used to increase the exposure if that underlying asset depreciates sharply.

To illustrate this topic, the chart on the next page shows the weekly performance of a long position on the S&P 500 index effectively managed with equity overlay as described above from mid-February 2005 to the end of April 2013. Apart from a maximum drawdown that is half that of the index (24.1% versus 52.8%), the position managed with an equity overlay posted a gain of 4.9% p.a. with a volatility of 10.8%, whereas the benchmark – a long position without equity overlay – gained 5.6% p.a. with a volatility of 18.2%.

Over the fifteen-year period considered in this article, the added value of an asymmetrical management can be analyzed by systematically applying a pro-forma equity overlay to the stock markets in Switzerland and in the main developed countries within the two LPP allocations with the highest risk: "LPP-40 plus" and "LPP-60 plus". The impact of the asymmetry becomes clear when we compare the results thus obtained for these profiles with the results of the lower-risk LPP profile without equity overlay in each case, namely "LPP-25 plus" and "LPP-40 plus" (see the table on the next page).

Thus, with an equity overlay, "LPP-40 plus" gained 4.0% p.a., compared with 3.9% p.a. for "LPP-25 plus" without equity overlay, with a volatility less than one percentage point higher (5.3% versus 4.5%). More significantly, the maximum drawdown was limited to 20.2% – certainly higher than the 16.9% figure for the "LPP-25 plus" profile without equity overlay, but well below the 28.6% recorded for "LPP-40 plus" without equity overlay. Finally, during the worst year (2008), the drawdown came to 13.6%, compared with 11.6% for "LPP-25 plus" without equity overlay and 20.5% for "LPP-40 plus" without equity overlay.

The results are similar for the "LPP-60 plus" profile with an equity overlay. It shows a gain of 4% p.a., identical to the performance of "LPP-40 plus" without equity overlay, also with a volatility less than one percentage point higher (7.9% versus 7.2%). The maximum drawdown, meanwhile, came to 30.5%. This is barely more than that of "LPP-40 plus" without equity overlay (28.6%) and much less than that of the "LPP-60 plus" profile without equity overlay (41.8%). The 2008 loss was 21.4%, compared with 20.5% for "LPP-40 plus" without equity overlay and 31.2% for "LPP-60 plus" without equity overlay.

The asymmetry created by portfolio insurance strategies makes it possible to consider strategic asset allocations that include higher equity exposures, without having to accept significantly greater risk. Moreover, should the coming years be characterized by a normalization in risk premiums, then these strategic allocations will also make it possible to expect higher returns. Indeed, they will benefit from equity outperformance to a larger extent in this case, even to a larger extent if the major foreign currencies would regain some ground.

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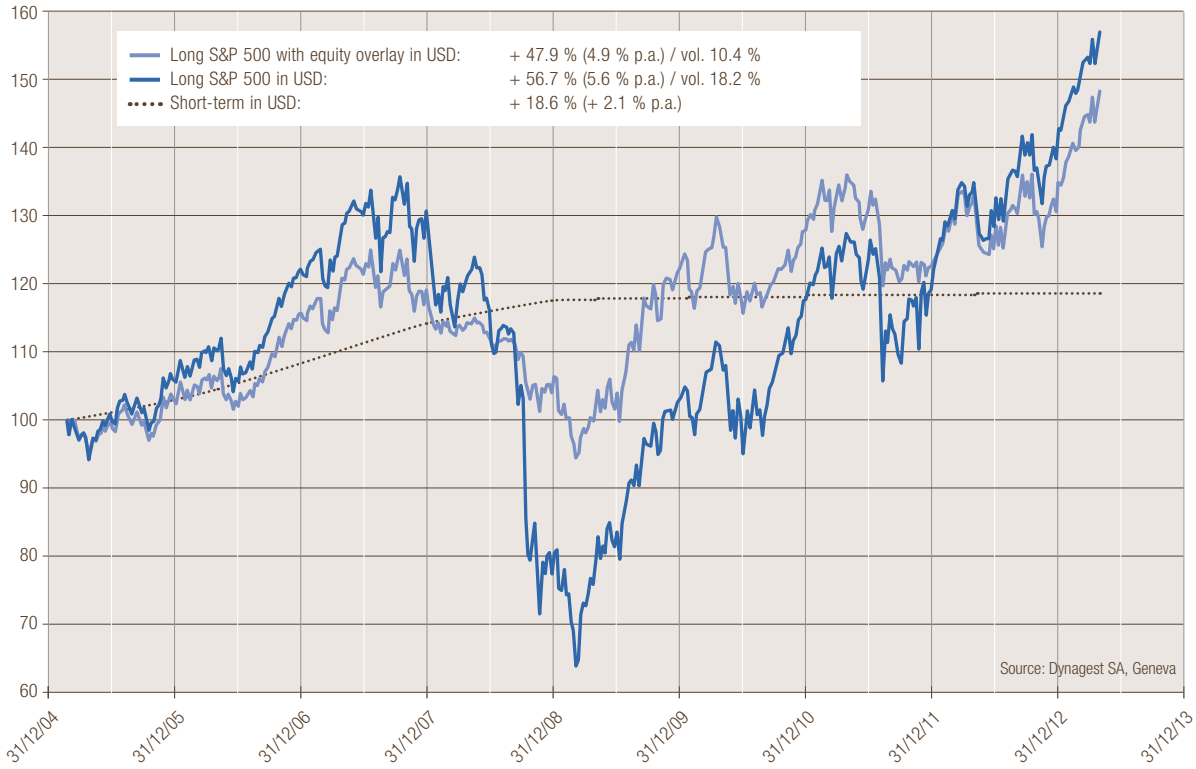
Effective equity overlay on the S&P 500, 2005-2013



An approach that allows for greater equity exposure
LPP profiles, 1998-2012: impact of a pro-forma CPPI equity overlay on stock markets in the developed world

Bimonthly data	LPP-25 plus	LPP-40 plus	LPP-60 plus	LPP-25 plus	LPP-40 plus with EO	LPP-40 plus	LPP-60 plus with EO
Annual return	3.9%	4.0%	3.7%	3.9%	4.0%	4.0%	4.0%
Volatility	4.5%	7.2%	10.8%	4.5%	5.3%	7.2%	7.9%
Sharpe ratio	0.66	0.42	0.26	0.66	0.58	0.42	0.39
Sortino ratio (@ 3.5%)	0.74	0.46	0.28	0.74	0.68	0.46	0.45
Maximum drawdown	-16.9% 16.5.07-28.2.09	-28.6% 31.5.07-28.2.09	-41.8% 31.5.07-28.2.09	-16.9% 16.5.07-28.2.09	-20.2% 31.5.07-28.2.09	-28.6% 31.5.07-28.2.09	-30.5% 31.5.07-28.2.09
Worst year	-11.6% 2008	-20.5% 2008	-31.2% 2008	-11.6% 2008	-13.6% 2008	-20.5% 2008	-21.4% 2008
Best year	13.7% 2009	18.0% 2009	28.3% 1999	13.7% 2009	15.9% 2009	18.0% 2009	22.0% 1999

NB: Historical data in CHF:
foreign bonds: + 3.8% p.a.
CHF bonds: + 3.6% p.a.
foreign equities: + 2.2% p.a.
Swiss equities: + 3.2% p.a.
private equity: + 1.6% p.a.
hedge funds: + 3.3% p.a.
foreign real estate: + 5.5% p.a.
Swiss real estate: + 4.6% p.a.

Sources: Datastream, Bloomberg

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