Hedging Currency Risks

Dossier  Currency Hedging in an International Portfolio Context
Column   Currency Hedging at Any Price?
Equity Global  A Decent Dividend Yield, Please!
Contents

**Asset Allocation**
It Won’t Be as Easy This Time 4
Outlook 5

**Macro Global**
“Verbal Rate Cut” Still Unfolding 6

**Equity Global**
A Decent Dividend Yield, Please! 8

**Dossier**
Currency Hedging in an International Portfolio Context 12

**Column**
Currency Hedging at Any Price? 18

**Real Estate**
Foreign Real Estate Investments Deliver Significant Diversification Effects 21

**Alternative Investments**
Harnessing Liquidity – Using Liquid Alternatives to Optimize Portfolio Performance 23

Fruits are suitably packaged to avoid damage.
Editorial

Dear Reader

Investment opportunities are the lifeblood of the financial markets. But opportunities always go hand in hand with risks, price or interest rate risks for example. Further, currency risks are increasingly important as investments become more global.

This edition of Trends takes an in-depth look at the currency exposure of portfolios with an international focus. The Dossier article looks at this topic in terms of strategy. We also examine the tactical aspects involved in managing foreign currency holdings and address the issue of dividend strategies. And as usual, we report on the traditional markets and trends.

We hope this edition makes for enjoyable and thought-provoking reading, and provides you with some investment ideas.

Yours sincerely

Robert Parker
Head Strategic Advisory Group, Member of the Global Investment Committee
2012 was a good year for investing. Most analysts’ predictions fell short of reality. The extraordinary thing was that practically every investment category – whether government bonds, real estate or equities – delivered very good returns. So the only way to get it really wrong was not to invest at all. This year, things are not going to be quite so straightforward, so getting asset allocation right is going to matter again.

There are not likely to be any major changes in the macro-economic picture in 2013; the central banks are holding fast to their policy of low interest rates in order to fire up growth, which they see as insufficient. And in the developed world, it does seem set to be modest. The reasons for that are to be found in the continuing pressure on governments to implement austerity measures and in companies’ cautious approach to investment. This means that the risk of inflation remains low for the time being, and so both nominal and real interest rates are still hovering around zero.

Investors, then, are under pressure. Although government bonds’ continuously diminishing yield to maturity over recent years was compensated for by price gains, the prospect of such in future is limited for mathematical reasons alone, assuming negative returns on longer-dated paper are ruled out. Yet the returns on corporate paper are scarcely any better, so investors are forced to move towards the more risky end of the investment spectrum. The liquidity wave is, so to speak, inundating one investment class after another.

Is the next bubble on the way?
Skeptics point out that cheap money is a way of manipulating the financial markets, and that the rise of the prices of real estate and equities is unsustainable, because they are not driven by any underlying improvement. An analysis of valuations would seem to refute this argument. Even if, in the interests of caution, profit estimates for the equity markets are adjusted downwards, equities are far from expensive. And even if their relative valuation is compared with that of government or corporate bonds, they are valued at a record low. Also, the returns on real estate look good when set against bonds. While the flood of money has only just started to lap at the bond markets, it is only a matter of time before it slops over onto the equity markets too. The first signs of this are appearing already. For the first time in a long time, money is flowing into equity funds, while the pressure for returns is forcing the skeptics, too, to look for more risky investment segments. The only thing that is certain is the creeping loss of real value.

Not a one-way street
Prices fluctuated less than we had expected in 2012. In particular, the clear statement of the European Central Bank in the summer reduced the probability of the much-cited “tail risk event”. However, the fact that every correction was promptly seized as an opportunity to buy was probably a reflection of the attitude of market participants, whose positioning was still far too cautious. Now that the investors are expected to return to the markets in 2013, there is a greater risk of major setbacks if something unexpected and unwelcome occurs, and that is an argument in favor of continuing our strategy of controlled overweighting on equities, with liquidity buffers to further extend exposure. Anyhow, we have set our year-end targets on the basis of further price gains for equities. And the largely underestimated “tail risk” may well turn out, quite contrary to expectations, to be a mighty upward breakout.

### Globally oriented model portfolio for Swiss pension funds*

<table>
<thead>
<tr>
<th></th>
<th>CHF</th>
<th>EUR</th>
<th>GBP</th>
<th>USD, CAD</th>
<th>JPY</th>
<th>Em. Mkts, Commodit.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money Market</td>
<td>14.6%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0% ▼</td>
<td>0.0%</td>
<td>0.0%</td>
<td>14.6% ▼</td>
</tr>
<tr>
<td>Bonds</td>
<td>9.8%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>9.8%</td>
</tr>
<tr>
<td>Equities</td>
<td>47.1%</td>
<td>1.6%</td>
<td>1.4% ▲</td>
<td>1.0% ▼</td>
<td>1.1%</td>
<td>52.2%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>53.2%</td>
<td>3.0%</td>
<td>1.0%</td>
<td>2.0%</td>
<td>1.0%</td>
<td>60.2%</td>
<td></td>
</tr>
<tr>
<td>Equities</td>
<td>10.1% ▲</td>
<td>6.9%</td>
<td>1.6% ▼</td>
<td>7.0% ▲</td>
<td>1.8%</td>
<td>5.8%</td>
<td>33.2% ▲</td>
</tr>
<tr>
<td></td>
<td>10.0%</td>
<td>4.0%</td>
<td>2.0%</td>
<td>8.0%</td>
<td>2.0%</td>
<td>4.0%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Total</td>
<td>71.8% ▲</td>
<td>8.5%</td>
<td>3.0%</td>
<td>8.0%</td>
<td>2.9%</td>
<td>5.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td></td>
<td>73.0%</td>
<td>7.0%</td>
<td>3.0%</td>
<td>10.0%</td>
<td>3.0%</td>
<td>4.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Bold**: tactical positioning, normal type: long-term strategy/benchmark. Arrows show change compared with last issue of Trends, 11/12.12. Source: Credit Suisse.

* This is an indicative asset allocation, which may change over time.

Historical performance indications and financial market scenarios are no guarantee for current or future performance.
### Asset Allocation

#### Outlook

<table>
<thead>
<tr>
<th>Instrument</th>
<th>31.12.2012</th>
<th>Estimate 12 months</th>
<th>Expected return in local currency (%)</th>
<th>Expected return in CHF (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equity market</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USA (S&amp;P 500)</td>
<td>1426</td>
<td>1550</td>
<td>8.7</td>
<td>9.2</td>
</tr>
<tr>
<td>Germany (DAX)</td>
<td>7612</td>
<td>8200</td>
<td>7.7</td>
<td>10.6</td>
</tr>
<tr>
<td>Netherlands (AEX)</td>
<td>343</td>
<td>370</td>
<td>8.0</td>
<td>10.8</td>
</tr>
<tr>
<td>UK (FTSE 100)</td>
<td>5698</td>
<td>6400</td>
<td>8.5</td>
<td>7.4</td>
</tr>
<tr>
<td>France (CAC 40)</td>
<td>3641</td>
<td>3900</td>
<td>7.1</td>
<td>10.0</td>
</tr>
<tr>
<td>Italy (MIBTEL)</td>
<td>16273</td>
<td>18000</td>
<td>10.6</td>
<td>13.6</td>
</tr>
<tr>
<td>Spain (IBEX 35)</td>
<td>8168</td>
<td>9000</td>
<td>10.2</td>
<td>13.1</td>
</tr>
<tr>
<td>Switzerland (SMI)</td>
<td>6822</td>
<td>7300</td>
<td>7.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Japan (TOPIX)</td>
<td>860</td>
<td>900</td>
<td>4.7</td>
<td>11.3</td>
</tr>
<tr>
<td><strong>Capital market (10-year government bonds)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USD</td>
<td>1.76</td>
<td>1.90</td>
<td>0.6</td>
<td>1.1</td>
</tr>
<tr>
<td>CAD</td>
<td>1.80</td>
<td>2.00</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>AUD</td>
<td>3.27</td>
<td>3.50</td>
<td>1.5</td>
<td>-3.8</td>
</tr>
<tr>
<td>JPY</td>
<td>0.79</td>
<td>1.00</td>
<td>-1.0</td>
<td>5.3</td>
</tr>
<tr>
<td>EUR</td>
<td>1.32</td>
<td>1.70</td>
<td>-1.9</td>
<td>0.8</td>
</tr>
<tr>
<td>GBP</td>
<td>1.83</td>
<td>2.20</td>
<td>-1.2</td>
<td>-2.2</td>
</tr>
<tr>
<td>CHF</td>
<td>0.53</td>
<td>1.00</td>
<td>-3.5</td>
<td>-3.5</td>
</tr>
<tr>
<td><strong>Money market (3 month LIBOR)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USD</td>
<td>0.31</td>
<td>0.40</td>
<td>0.3</td>
<td>0.8</td>
</tr>
<tr>
<td>CAD</td>
<td>1.24</td>
<td>1.20</td>
<td>1.2</td>
<td>1.9</td>
</tr>
<tr>
<td>AUD</td>
<td>3.24</td>
<td>3.20</td>
<td>3.2</td>
<td>-2.2</td>
</tr>
<tr>
<td>JPY</td>
<td>0.17</td>
<td>0.20</td>
<td>0.2</td>
<td>6.5</td>
</tr>
<tr>
<td>EUR</td>
<td>0.13</td>
<td>0.20</td>
<td>0.2</td>
<td>2.8</td>
</tr>
<tr>
<td>GBP</td>
<td>0.52</td>
<td>0.60</td>
<td>0.5</td>
<td>-0.5</td>
</tr>
<tr>
<td>CHF</td>
<td>0.01</td>
<td>0.10</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Currencies against CHF</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USD</td>
<td>0.92</td>
<td>0.92</td>
<td>-</td>
<td>0.5</td>
</tr>
<tr>
<td>CAD</td>
<td>0.92</td>
<td>0.93</td>
<td>-</td>
<td>0.7</td>
</tr>
<tr>
<td>AUD</td>
<td>0.95</td>
<td>0.90</td>
<td>-</td>
<td>-5.2</td>
</tr>
<tr>
<td>JPY</td>
<td>1.06</td>
<td>1.12</td>
<td>-</td>
<td>6.3</td>
</tr>
<tr>
<td>EUR</td>
<td>1.21</td>
<td>1.24</td>
<td>-</td>
<td>2.7</td>
</tr>
<tr>
<td>GBP</td>
<td>1.49</td>
<td>1.47</td>
<td>-</td>
<td>-1.0</td>
</tr>
<tr>
<td><strong>Gold</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USD/oz</td>
<td>1676</td>
<td>1850</td>
<td>10.4</td>
<td>10.9</td>
</tr>
</tbody>
</table>

Performance indications do not consider commissions levied at subscription and/or redemption. Neither historical nor estimated performance indications and financial market scenarios are a guarantee for current or future performance.

Source: Credit Suisse.
"Verbal Rate Cut” Still Unfolding

Thomas Herrmann, Economist, Global Macroeconomic Research

Macro Global

ECB president Draghi’s comments last July (“whatever it takes to preserve the euro”) continue to have very powerful effects. The ECB’s willingness to buy government bonds (OMT program) reduced fears of extreme events like public defaults of bigger countries or even a euro break-up. The ECB has (still) not bought a single bond under the program, but the positive economic and market effects continue to unfold. In response to the strong commitment, bond yields of "peripheral" European governments have declined drastically, especially at the short end of the curve. Two-year bond yields in Spain are down more than 400 basis points from the July peak, without a change in the ECB’s key policy rate. Governments are probably already meeting the conditionality that would be required for ECB purchases and basically just have to "raise their hands" to get support.

In times of low yields globally, any yield pick-up should attract buyers. While there could be some swings in yields, sustained significant increases in European "peripheral" yields are thus unlikely. A key source of eurozone stress (a sudden increase of yields) is unlikely to return. Bank lending surveys, credit and economic indicators are likely to point to gradual improvement as the “monetary policy impulse” gets stronger. However, governments remain challenged to reduce their deficits and, given these "fiscal headwinds," we remain cautious regarding the overall growth outlook.

US mini-cliff (the fiscal sequel)

As expected, a last minute US fiscal cliff deal was reached at the beginning of January. The full tightening impact has...
been avoided and the majority of fiscal cliff elements have been permanently dealt with and do not need to be discussed again in the context of a “common deadline.” Some elements have been extended for at least one year, some “temporary” tax relief has been made permanent and some elements do take effect (e.g. taxes for upper income households). The effective drag on growth is likely to be at the lower end of our estimate of last October (1% to 2% of GDP). The biggest open issue is that the spending cuts, which were supposed to take effect “automatically” on January 1, were postponed by two more months. They account for about USD 90 billion of the around USD 650 billion “original” cliff total. The cliff has turned into a “mini-cliff.”

An agreement on how big the cuts will be now has to coincide with a deal on the increase of the legal debt ceiling, which is also needed by the beginning of March. We expect another compromise will be reached but it could well be last-minute again. Unless there is no compromise at all, which seems unlikely from a political “marketing” point of view, the additional immediate impact this year (spending cuts) should be very limited. Compromise will however also have to ensure sufficient cuts. Otherwise a renewed US credit rating cut could result and could bring back some (short-term) market concerns.

Emerging markets: again a key growth driver in 2013

Emerging markets, especially non-Japan Asia, are (again) likely to account for more than three quarters of global GDP growth in 2013. In China, major fiscal stimulus is unlikely as the new leadership aims to achieve sustainable growth, in our view. Combined with persisting headwinds in key export markets, e.g. Europe, Chinese growth should remain below the trend of the past years. Despite all this, Chinese credit growth, driven in particular by financial market developments (e.g. bond issuance), remains supportive. Business surveys in China and many other emerging markets (e.g. India, Turkey and Brazil) tentatively point toward cyclical improvement, which looks likely to unfold more visibly in early 2013.
As safe fixed-interest investments do not produce much by way of an income these days, talk of there being something of an investment crisis is perfectly justified. Investors in search of acceptable returns have no option but to go over to more risky strategies. One option is to focus on "dividend gems" – shares in sound and well-run companies that pay out above average dividends. In this interview, Felix Maag discusses interesting aspects and opportunities of dividend strategies. He has in-depth knowledge of dividend strategies and is the head of Credit Suisse’s Global Dividend Yield Team.

Dr. Maag, there have been market phases – the end of the 1990s, for example – when dividend yield was a secondary consideration in evaluating shares. It now appears to be the main thing analysts consider. Why do you think this change has come about?

If you compare the long-term performance of high-dividend equities with those on the equity market as a whole, there are two possible conclusions to draw. The first is that high-dividend equities outperform to a significant degree, as is clear from the chart below, which shows that, over the last 17 years, the MSCI World High Dividend Yield NR Index managed to beat the MSCI World NR Index by over 100 percentage points. Secondly, dividend strategies don’t perform equally well in all market environments. At the end of the 1990s, for example, a lot of investors focused on growth stocks. With dotcom euphoria raging, IT companies in particular stood centre stage, with investors pinning their hopes on high, indeed excessive, growth rates from them. Under such conditions, dividend strategies simply couldn’t keep up, as the point of them is to select securities not so much on the basis of profit growth, but – on the contrary – with an eye on companies with stable profits, as only then can reliable dividends be paid out.

Does it follow that dividend strategies tend to perform less well than the market as a whole during strong growth phases?

Not necessarily. After the dotcom bubble burst, and the subsequent years of crisis, the global economy started to recover in 2003. Between 2005 and 2007, companies generally enjoyed high growth rates, which was, broadly speaking, an argument in favor of growth stocks, but dividend strategies were able to keep up very well or, indeed, to outperform the market as a whole. They were able to do that because, during this phase, many businesses in the financial sector – not only...
banks but also insurance companies – had become dividend gems themselves, notching up hefty growth rates and being in position to pay out large and growing dividends.

As a rule of thumb, though, it can certainly be said that dividend strategies tend to underperform when the economy is buoyed up by high rates of growth. The period between 2005 and 2007 was something of an exception. It does, though, strike me as important that investors should take the long view. Generally, the recommended investment horizon for equities is between five and ten years, so in those terms it doesn’t really matter whether or not growth stocks are in favor during a given period.

Another important point I’d like to make while we’re on the subject of long-term investment horizons is that, if the dividends are not siphoned off but systematically reinvested as soon as they’re paid out, investors can benefit from the compound interest effect, which plays a significant part in the long-term outperformance of dividend strategies. If they do this consistently, they are, so to speak, obliged to invest also during periods when the markets are adjusting and many other investors are avoiding exposure to equities. In the longer term, then, they can profit from the favorable valuations at the moment of reinvestment.

Many asset managers are currently arguing in favor of investing in dividend gems as an alternative to money market investments or safe bonds. Do you think they have a case?

As I see it, dividend strategies always make sense, and in particular when interest rates are as low as they are right now. After all, there’s not much to be made out of cash or top-rated government bonds, or even corporate bonds. Of course the risk profile of equities differs from that of bonds, but for me the killer argument in favor of the attractiveness of dividend-bearing stocks is the fact there are, in certain sectors, companies whose stocks pay dividends higher than the returns on the same company’s bonds. Historically speaking, such differences between dividend yields and the returns on bonds were often an indication that the stock in question was favorably valued. Currently, we can observe that this is the case particularly in defensive sectors such as basic consumer goods, health, telecoms and utilities, but it also makes its presence felt in cyclical sectors – in certain industrial or chemical companies, for example.

Currently, there’s yet another argument in favor of dividend strategies. On the assumption that economic growth over the
next couple of years is going to be positive but no more than moderate, corporate profits are set to rise no more than moderately likewise, and so price gains on the stock markets are not going to be very great either. This is precisely the environment in which a stock’s dividend is far and away the most important component of its overall performance. So, if we are right in our view of the economic framework, a dividend strategy should pay off well for quite some time yet.

Does that mean there’s no sign yet of a “dividend bubble”?
I really don’t think we’re anywhere near a “bubble” in dividend-bearing securities. The fact is, if you consider the valuations, they are still moderate in comparison with the market as a whole. To put it another way, there’s no evidence of overvaluation of the kind that we saw at the time of the dotcom bubble, when extremely high price-earnings ratios were paid for growth stocks.

Sooner or later, the Western central banks’ loose monetary policy is likely to produce inflation. What’s going to happen to dividend strategies under such conditions?
When inflation is moderate, equities – and hence, of course, also dividend strategies – are more likely to get you the results you want than bonds, as rising interest rates mean falling bond prices. This presupposes that the central banks raise interest rates slowly and in small steps. If interest rates go up rapidly, though, dividend strategies are likely to lag behind the market as a whole, as the return from dividends becomes less attractive compared to the rising level of interest rates. So, at the first sign of inflation, you need to work out by how much it’s likely to rise.

How does the return in the form of a dividend actually relate to the overall return from equities?
The overall return is made up of three elements: the dividend yield, dividend growth and the change in valuation. Analyses show that the dividend yield, viewed over a long time horizon, accounts on average for around two-thirds of (real) stock market returns. You can see that in the chart below.

Where, at present, are the highest dividend returns to be found?
The current dividend yield on the MSCI World Index is around 2.75%. If you back sound and attractive dividend-bearing securities, you can more or less expect a dividend yield in the order of 1% to 2% above that. In the global context, the level of dividends in Europe and Asia (excluding Japan) is higher than in the USA and Japan, and, when one looks at sectors, the highest dividend yields are in telecoms and utilities, with the lowest tending to be the IT and non-basic consumer goods sectors. It needs to be said, though, that the IT sector has recently started to catch up on dividends; there are now some IT companies with very strong balance sheets and quite a lot of cash. That means they have either started to pay dividends or have kept on increasing the ones they paid already.

What are the main criteria when selecting securities?
You should certainly invest in companies that pay reliable dividends. What needs to be analyzed is which companies can keep on paying dividends even under adverse economic conditions. An important figure to look at here is the payout ratio (dividend per share over earnings per share). If it’s

So how do we look at the return on the MSCI World Index over a long time horizon?
In the MSCI World Index return over the past 42 years, the dividend yield accounted for around two-thirds of total real returns. This is not surprising, if you consider that the average dividend yield over the past 42 years was around 3.5%, the dividend growth was 3% and the change in valuation was 0.7%.

Breakdown of real equity market returns by country (1970–2012, % p.a.)
Historically, the dividend yield accounted for around two-thirds of total real returns across major stock markets.

Source: Credit Suisse, Société Générale, as at December 31, 2012.

Historical performance indications and financial market scenarios are no guarantee for current or future performance.
too high, it gives cause for concern, as if profits fall even only slightly, the likelihood of a dividend cut increases. It’s also important, though, to examine carefully individual companies’ dividend policies and understand them. Some companies – or rather their managers – strive to keep on paying constantly rising dividends. Others may, for example, pay out 40% or 60% of their profits – the higher the profit, the higher the distribution and vice versa. Dividends are more stable in defensive sectors like basic consumer goods or health than they are in cyclical ones. But in the latter too, there are businesses whose managers have adopted a strategy of paying dividends and who focus on sustainability, by which is meant paying a steady dividend even in a difficult economic environment. Lastly, the selection process involves identifying those companies that pay out above-average dividends of good quality and reasonable valuation. And we find stocks that meet these criteria not only in defensive but also in cyclical sectors.

Are dividend gems mainly shares issued by large corporations? You can’t generalize about that. If you mention dividend-paying stocks, people automatically think of traditional big corporations like Swisscom, Novartis, Nestlé, Total or Heinz, for example, but dividend gems turn up almost as frequently among small and medium-sized enterprises. It follows that the investment spectrum is big enough, not only in terms of sectors but also of market capitalization, to permit the assembly of a broadly diversified portfolio with dividend gems.

**Most important advantages of dividend payments**

- Dividends represent real cash flow; turning surplus liquidity into dividend payment reduces the risk of unprofitable investments by the corporation’s management.
- Dividends are important indicators of a company’s soundness and future profitability.
- Dividends are the management’s vote of confidence in a company.
- Historically, dividend yields made up most of total equity market returns.
Today, investment portfolios are often characterized by a significant and rising exposure to foreign assets, thus confronting portfolio managers with increased currency risk. In this article, we propose a framework to analyze the impact of foreign currency exposure on the risk characteristics of portfolios and the associated optimal hedging decision through time. Our analysis is broad based and analyses optimal hedging accounting for a wide set of investors, asset classes, and investment horizons.\(^1\)

Our findings confirm that a dynamic optimization of the hedge ratio can significantly and favorably improve the risk/return properties of globally invested portfolios through time. Having said this, these results can vary for specific reference currencies and asset classes or portfolio constructions. Moreover, our results challenge the static views that currency hedging is either a “zero-sum game”, or that “full hedging” is optimal. We show that a rigorous dynamic hedging approach entails potentially significant gains for the portfolio manager when investing globally.

**Methodology and intuition**

We define the optimal hedging strategy as one that minimizes the overall volatility of foreign investment, either at the asset class or portfolio level, over a given investment horizon. We see that three factors influence the hedging decision. First, the minimization of the volatility of an asset class/portfolio should intuitively depend on both variance and co-variances of the unhedged asset class/portfolio and the currency. More precisely, we should expect to go long on the foreign currencies that are negatively correlated with a

---

\(^1\) We consider EUR, USD, CHF, and GBP based investors. Asset classes cover bonds, equities, and commodities, as well as equity, bond and multi asset class portfolios. Different investment horizons relevant to the hedging decision are analyzed (3 months, 1 year, and 3 years). We allow hedge ratios to be constrained to the underlying asset class exposure (0% to 100%) or to move freely.
specific asset in our portfolio and at the same time to go short on foreign currencies that are more positively correlated. Second, the relative volatility of foreign exchange compared to the underlying asset class plays a role to the extent that if unhedged, return volatility is mainly dictated by the foreign exchange risk. It will then be optimal to increase hedging in order to reduce the overall volatility. Finally, because co-variances and variances are time sensitive, we should expect the optimal hedging strategy to be dynamic so as to capture changing correlations among currencies and investments. In our analysis, hedging costs are implicitly accounted for through foreign exchange forward premiums. We do not impose any conditionality on future expected exchange rates or underlying asset class paths in calculating the optimal hedge ratio.

In order to better understand the intuition, let’s take the example of a EUR based investor willing to hedge his equity investment at the single asset class level. Furthermore, assume he invests in local equities in Switzerland, the UK, the USA and Japan. Chart 1 displays the rolling correlation of the reference currency with the local equity indices. It shows that the EUR is rather uncorrelated or slightly negatively correlated to US and Japanese equities until 2008. After 2008, the EUR tends to behave in a more pro-cyclical fashion. The notable exception is UK equities. During the crisis, the GBP fell rapidly, suggesting that sterling behaved in an even more pro-cyclical fashion than the EUR. The opposite holds true for a CHF investment. During most of the period, the EUR correlated positively with CHF equities. Since 2009, the EUR/CHF continued...
to decline with rising equities, and the positive correlation reversed somewhat.

Let us now consider the optimal hedging decision for the EUR based investor holding a 1-year investment horizon (Chart 2). During most of the period considered, it would appear optimal to hedge 100% of the underlying local equity exposures. One exception is Swiss equities. In this case, a EUR based investor would have been well advised to take more exposure to the CHF in order to benefit from its counter-cyclical nature and reduce foreign investment volatility.

In our discussion, we have constrained the optimal hedge ratio between 0% and 100% of the underlying foreign equity exposure. However, had we allowed for unrestricted hedge ratios, a EUR investor would have sold foreign currency in excess of the investment related underlying exposure. Why? Because those currencies displayed positive correlations with local equities, hence potentially adding risk to the already existing equity investment. While the correlations between our reference currencies and local government bonds also appear to be time varying, the optimal hedge ratios are high across the board and tend to be more static. More precisely, we find that variance minimizing hedge ratios range between 70% and 100% for all investment horizons and reference currencies. This is because bond investment volatility tends to be mostly determined by the currency part, while the underlying bond volatility remains small.

The impact of hedging on portfolio performance

Looking at portfolios of equities, bonds or a mix of assets, we need to account for an additional dimension in the hedging decision: the currency not only interacts with single asset class investments, but the underlying assets themselves interact and generate correlation patterns that alter the optimal decision from a hedging standpoint. Our equity portfolios are invested in Swiss, EU, Japanese, US, and UK local markets, while our bond portfolios are invested in the same regional government bond markets and are also invested in inflation linked, corporate, high-yield bonds and asset-backed securities. Finally, our balanced portfolios invest in all the above, plus gold, commodities, hedge funds and real estate.

A couple of observations are worth highlighting. First, we continue to find rather elevated optimal hedge ratios for bond related investments in general. Second, we find that the optimal hedge ratio in

---

2 We use 3 month LIBOR rates to calculate hedged returns. If the investment horizon is longer than three months, we calculate the hedged returns as the product of the quarterly returns.

3 Note also that the optimal hedge ratio tends to decline the more positively correlated EUR and CHF equities become.

4 The details regarding indices and portfolio weights for each reference currencies are available upon request.
a balanced portfolio is more volatile for the foreign asset classes that appear with a low quota in the portfolio. In those instances, the reference currency correlation with the underlying asset class plays a bigger role in determining the optimal hedge ratio. On the other hand, the higher the share in the portfolio, the lower and more stable the optimal hedge ratio tends to be.

In Chart 3, we take the specific case of a CHF based investor holding a diversified international portfolio of equities. We compare three static hedging rules with our constrained and unconstrained dynamic optimal hedging strategy. The unconstrained hedging strategy clearly is superior to others. On the other hand, our constrained strategy is not outperforming a fully hedged strategy. This is because the investor cannot exploit the benefits of the unconstrained strategy.

The CHF based investor should have shortened the GBP and gone long the JPY and the USD in excess of the respective equity exposures to benefit from the pro-cyclical nature of the GBP and the countercyclical nature of the USD and the JPY. Had he done so, volatility would have decreased and performance increased.

The risk/return properties of the minimum variance hedging strategies together with unhedged and fully hedged strategies are summarized in the table on the next page. The first notable point is that the unconstrained minimum variance hedging strategy is the best strategy at all the relevant investment horizons and for all currencies. This further highlights that currency hedging activity can be a potent risk/return enhancer when allowed to take positions in excess of the underlying asset/portfolio exposure. Moreover, the fact that the results hold true at longer investment horizons confronts the disputable, yet widespread, notion that currency investment is a “zero sum” game. On the other hand, traditional hedging activity which is constrained to the underlying asset/portfolio exposure, does not always warrant extracting the maximum benefits from the optimal hedging strategy.
Conclusion

The implementation of a rather elevated hedging ratio for bond investments is the best strategy to minimize volatility for all investment horizons and reference currencies. At the equity level, correlations between foreign exchange and the underlying instrument do matter to a greater extent. This is also the reason why the dynamics of the hedging strategy are more fluctuating in time. Overall, our results suggest relatively high equity hedge ratios, depending on the reference currency. The optimal hedging quota is lower for a balanced portfolio compared to single asset class portfolios. This is true for all the currencies examined and is likely due to the portfolio diversification effect, which requires less hedging to reduce overall volatility. Finally, our results are validated across the different investment horizons studied.

We believe that this framework offers a sound and flexible base for optimal portfolio hedging analysis in the context of unknown future returns. Moreover, this approach could be used as a “backbone” strategy that seeks to minimize overall investment/portfolio risk through currency hedging activity. In addition, this framework could be easily combined with a pure tactical foreign exchange overlay strategy, where the portfolio manager seeks to enhance portfolio returns by taking active views on currencies over a short-term horizon.

Information ratios of various portfolio hedging strategies

<table>
<thead>
<tr>
<th>Investor</th>
<th>Portfolio</th>
<th>Unhedged</th>
<th>Fully hedged</th>
<th>Hedge between 0% and 100%</th>
<th>Unconstrained</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR</td>
<td>Stock</td>
<td>0.04</td>
<td>0.06</td>
<td>0.07 0.08 0.21</td>
<td>0.46 0.33 0.39</td>
</tr>
<tr>
<td></td>
<td>Bond</td>
<td>0.70</td>
<td>1.34</td>
<td>1.38 1.42 1.51</td>
<td>1.44 1.44 1.54</td>
</tr>
<tr>
<td></td>
<td>Balanced</td>
<td>0.29</td>
<td>0.30</td>
<td>0.32 0.34 0.32</td>
<td>0.79 0.76 0.85</td>
</tr>
<tr>
<td>CHF</td>
<td>Stock</td>
<td>-0.15</td>
<td>0.12</td>
<td>0.08 0.07 0.26</td>
<td>0.45 0.33 0.45</td>
</tr>
<tr>
<td></td>
<td>Bond</td>
<td>0.96</td>
<td>1.56</td>
<td>1.32 1.34 1.38</td>
<td>1.67 1.69 1.81</td>
</tr>
<tr>
<td></td>
<td>Balanced</td>
<td>-0.03</td>
<td>0.44</td>
<td>0.15 0.15 0.17</td>
<td>0.95 0.94 1.00</td>
</tr>
<tr>
<td>USD</td>
<td>Stock</td>
<td>0.12</td>
<td>-0.04</td>
<td>0.00 0.00 0.15</td>
<td>0.33 0.23 0.33</td>
</tr>
<tr>
<td></td>
<td>Bond</td>
<td>0.55</td>
<td>1.14</td>
<td>1.15 1.14 1.14</td>
<td>1.12 1.09 1.17</td>
</tr>
<tr>
<td></td>
<td>Balanced</td>
<td>0.29</td>
<td>0.24</td>
<td>0.27 0.27 0.27</td>
<td>0.67 0.65 0.76</td>
</tr>
<tr>
<td>GBP</td>
<td>Stock</td>
<td>0.24</td>
<td>-0.01</td>
<td>0.01 0.01 0.11</td>
<td>0.36 0.23 0.28</td>
</tr>
<tr>
<td></td>
<td>Bond</td>
<td>0.95</td>
<td>0.99</td>
<td>1.07 1.09 1.12</td>
<td>1.06 1.01 1.06</td>
</tr>
<tr>
<td></td>
<td>Balanced</td>
<td>0.50</td>
<td>0.20</td>
<td>0.42 0.42 0.41</td>
<td>0.57 0.55 0.65</td>
</tr>
</tbody>
</table>

MVHR = Minimum-variance hedge ratio.

Source: Datastream, Credit Suisse. Portfolios returns are computed from January 2006 to December 2011.

Historical performance indications and financial market scenarios are no guarantee for current or future performance.
For an investor investing in foreign currency, the unhedged return of the foreign investment is given by:

\[ R_{u,t} = (1 + R_{l,t})(1 + E_t) = R_{l,t} + E_t + R_{l,t}E_t \]

Where \( R_{l,t} \) is the return of the asset class in local currency and \( E_t \) is the exchange rate return.

For our purpose, we assume that the expected value of the foreign investment is known and it is equal to the investment at time \( t \). The hedged return on a foreign investment with the possibility to hedge can then be written as:

\[ R_{f,t} = R_{u,t} - \varphi_t(E_t - f_t) \]

Where \( f_t \) is the forward premium derived from covered interest rate parity, and \( \varphi_t \) is the hedge ratio. Following Schmittmann\(^5\), we derive the optimal hedge ratio by minimizing the variance of \( R_{f,t} \) with respect to \( \varphi_t \). An estimate of the optimal hedge ratio can be found by directly running the estimation:

\[ R_{u,t} = \alpha + \beta(E_t - f_t) + \varepsilon_t \]

Where \( \varepsilon_t \) is an error term and \( \beta \) is the estimate of the minimum variance hedge ratio. With some modifications, this result can be extended to a multi-asset class portfolio. The optimal hedge ratio for currency exposure associated with investing in country \( i \) is equal to the ratio \( \frac{\beta_i}{w_i} \), where \( w_i \) is the weight of country \( i \) in the portfolio.\(^6\)

---


\(^6\) Note that the hedge ratio now decreases with the weight in the portfolio. The intuition is as follows: if we find that being short GBP is a better hedge for our portfolio (say because GBP is pro-cyclical and positively correlated with the equity market), and the GBP equity weight is low to start with in the portfolio, then we would like to “over-hedge” that exposure and get the extra benefit of lower portfolio volatility.
Many investors turn their backs on a source of return by fully hedging their currency positions. Over the longer term it can make more sense for a global portfolio to only partially hedge, depending on cost and risk appetite. Tactical management can also be rewarding, not least because currency markets frequently act in ways that would suggest they are not efficient in the way they incorporate information. One example is the way trends continue. Exchange rates can move in the same direction for extended periods, partly because central banks have a different focus for their monetary policy. The European Central Bank and the Swiss National Bank have inflation targets, but the Fed keeps an eye on the labor market and economic growth. This is reflected in the dollar, which with the exception of a brief rally in the 2008/2009 crisis has consistently fallen in value in recent years, as a result of the very loose monetary policy pursued by the Fed (see chart below). Since the turn of the millennium the USD/CHF exchange rate has halved from about 1.80 to 0.90. In a long-term downtrend like this

Imagine a wheat field in late summer: the harvest has been gathered in, there are a few grains lying between the cut stalks and some dry grass at the edge. That’s rather how global bond markets look right now. With the exception of a few issues, the once generous yields have now all gone. Other areas of the financial markets, like equities, have some potential returns to offer, but we have seen in the past years that these involve significant risk of loss. However, there is one field that the farmer has scarcely touched — currencies. The biggest players in the currency markets by volumes include central banks and multinationals, and they don’t trade to make a profit, they do it for other reasons: central banks aim for an inflation target linked to monetary policy, while multinationals buy and sell goods. This makes currency markets fundamentally different from other asset classes such as equities, where trading seeks a return, and offers investors tactical opportunities to manage their currency positions.

**The trend is (generally) your friend**

Currency markets frequently act in ways that would suggest they are not efficient in the way they incorporate information. One example is the way trends continue. Exchange rates can move in the same direction for extended periods, partly because central banks have a different focus for their monetary policy. The European Central Bank and the Swiss National Bank have inflation targets, but the Fed keeps an eye on the labor market and economic growth. This is reflected in the dollar, which with the exception of a brief rally in the 2008/2009 crisis has consistently fallen in value in recent years, as a result of the very loose monetary policy pursued by the Fed (see chart below). Since the turn of the millennium the USD/CHF exchange rate has halved from about 1.80 to 0.90. In a long-term downtrend like this

![Trend phases of the dollar](chart)

**Trend phases of the dollar**

---

Source: Bloomberg, as at December 28, 2012.

Historical performance indications and financial market scenarios are no guarantee for current or future performance.
Swiss investors would have done best by being fully hedged, or at least buying dollars "on weakness" – an investment style known as trend following.

Last year, though, this style took a knock: most currency markets moved sideways within a broad trading range. In a phase like this, currencies such as the dollar should be "bought on weakness" and "sold on strength". When it comes to making profits by managing currency positions, the decision as to whether a pair is in an uptrend, a downtrend or a sideways phase is crucial. Some currencies, like the dollar and British pound, are currently going sideways. Is this just consolidation within a phase of competitive devaluation that has been going on for several years, or is it a turning point? There are several factors suggesting the dollar should go up – among them, relatively strong growth, an improving trade balance and monetary policy that is going much further than that of European and Asian central banks.

### Yield pickup in foreign currencies

Apart from trend following, another pattern seen in the currency markets is the carry trade. Some currencies, like the Australian dollar, have a higher yield than currencies such as the US dollar and the yen. The textbook says that this higher yield (the difference in interest rates) will be evened out by currency weakness so investors earn the same return in all currencies. The Australian dollar is a well-known example of a currency with high interest rates that does not have to be weak. The same goes for other commodity currencies and those of emerging markets like Brazil.

### Costs and benefits of strategic currency hedging

Apart from tactical currency management, long-term strategic hedging is very important in a global portfolio. In the past Swiss pension funds have diversified investments globally to reduce portfolio fluctuations, and equities and bonds in foreign currencies have generally been fully hedged.

This safety comes at a price, though. When investors hedge a currency, the cost of the hedging is equivalent to the interest rate differential between Swiss money market rates and those of the other currency. Ideally, the benefits of the risk reduction compensate the costs of the hedging: the optimal hedge ratio for a bond portfolio is not 100%, on average it is more like 85% (see the Dossier article "Currency Hedging in an International Portfolio Context").

The ideal hedge ratio also depends on the investment that is being hedged. Currency risk comprises a larger share of the total risk for bonds than for eq-
uities, so fixed income investments are generally more hedged. Portfolio context is also important: many currencies move independently of the financial markets, or even have a negative correlation; this helps to improve the portfolio risk profile. The Japanese yen is a good example: it tends to appreciate at times of crisis, cushioning the loss on riskier investments like equities.
Real Estate

Foreign Real Estate Investments Deliver Significant Diversification Effects

Ulrich Braun, Head of Real Estate Strategy and Advisory

When it comes to real estate investments, Swiss investors focus heavily on the domestic market. In light of the continuing upward trend on the Swiss real estate market, it makes sense to aim for broader diversification using international real estate investments.

While Swiss investors prioritize international diversification with equities and bonds, the proportion of investments in foreign real estate remains low. For example, by the end of 2011 Swiss pension funds had invested an average of 16.3% of total assets in Swiss real estate investments – by contrast the proportion was only 1.3% in foreign real estate investments. Among private investors, this trend is likely to be even more pronounced. Consequently, over 90% of real estate investments made by Swiss investors focus on the Swiss market.

This is surprising for the following reasons in particular: First of all, there is more and more money in Switzerland hunting an ever decreasing number of good quality properties. Correspondingly, prices in all market segments have increased. The net profits achieved by investing in residential apartments are currently below 3% before tax in some markets. Swiss real estate prices have been on a continued upward trend, with small interruptions, for 15 years now – in contrast, many foreign real estate markets have seen a pronounced correction over the last years and now again offer attractive opportunities to enter the market.

Secondly, real estate investments are especially suitable for diversification provided that different markets are taken into account. An example: The development of the office property market in Sydney (Australia) is primarily influenced by local supply and demand conditions, as well as the Australian real estate market regulations including long-term rental agreements and annual adjustments of rent by a set percentage. The corresponding developments and conditions are largely independent of what happens on the commercial real estate markets in, for example, Berlin (Germany) or Houston (USA). While demand on the office property market in Sydney stems mainly from the finance sector, the larger proportion of demand on the same market in Berlin comes from the public sector. And in Houston it is the energy sector which creates the most demand for office property. As this example shows, the diversification effect is clearly greater with international real estate investments than in the small-scale Swiss market.

Investment style

The emphasis of international real estate investments is on core investments. When allocating real estate assets for institutional and private investors the aim should be to attain a minimum of 80% of real estate assets in this segment. The main pillars of a core real estate strategy on foreign markets are a focus on real estate markets that are as transparent and liquid as possible, and a high-yield stability achieved through medium to long-term rental agreements with creditworthy tenants. If such a real estate investment strategy is followed, then a regular and adequate income distribution can be ensured while achieving constant capital growth.

Product range

In the past, real estate investments abroad were mainly accessed via funds with real estate stocks or REITs (Real Estate Investment Trusts). There is, however, a very strong correlation between international real estate stocks and the global stock market: Investors had to accept a loss of roughly 75% between 2007 and 2009. Since then, prices in real estate stocks have more than doubled again. High volatility and correlation with equity investments result in many of the advantages that come with diversification of a real estate investment being lost. Investors should therefore also consider direct investments. For Swiss investors the range of fund solutions, which invest in international real estate, is still extremely limited. The few funds that are viable options have an investment focus on commercial real estate in America, Europe and Asia-Pacific and largely hedge the foreign currency exposure against the Swiss franc. The valuation is relatively attractive: While funds focusing on Swiss real estate achieve an average premium of roughly 24%, funds concentrating on foreign real estate are currently trading at the level of their net worth.
Conclusion
By placing a greater emphasis on foreign real estate investments, a Swiss investor can achieve an increased diversification of his portfolio and, at the same time, reduce the focus on the domestic market. The best investment products are those that continuously provide cash flows from direct real estate investments in the form of a regular distribution and, at the same time, offer a certain level of trading liquidity. The range of funds available in Switzerland is indeed small, but it gives the investor easy access to foreign real estate.
The emergence of liquid alternative strategies has helped investors access the benefits of hedge fund exposure while improving overall liquidity. But how can investors use this increased liquidity to further optimize their portfolios? In this article, we discuss new ways investors are thinking about liquidity and explore how they are using liquid alternative strategies to capitalize on investment opportunities and better manage risk.

Liquidity is valuable because it allows investors to dynamically capture market upside in bullish environments, while potentially reducing downside risk in falling markets. But holding large cash reserves can potentially diminish a portfolio’s overall performance, especially in today’s low interest rate environment. As a result, investors have been increasingly seeking ways to improve their access to cash without sacrificing returns.

Because they have the flexibility to capitalize on opportunities across a range of markets, adding hedge funds to a portfolio may help to diversify assets, reduce volatility and deliver more consistent returns over the long term. However, gaining broad hedge fund exposure can be difficult due to investment restrictions, high minimum investment requirements and potential liquidity constraints, including long lock-up periods and infrequent subscription and redemption times.

Liquid alternative beta (also referred to as hedge fund replication) uses highly liquid instruments to replicate both the risk and return characteristics of otherwise less-liquid strategies such as hedge funds. It has emerged as a potential tool that investors can use to access the returns of the broad hedge fund universe and its individual strategies, with nearly the same liquidity as cash and no fear of lock ups. These highly liquid strategies can have a number of potential portfolio applications including diversification, risk management and performance optimization.

Using liquid alternatives to reduce cash drag

An initial allocation to hedge funds may require investors to take the time to source managers and to complete the due diligence process. In addition, when increasing allocations or rebalancing hedge fund portfolios, investors may face potential restrictions on fund subscriptions. Traditionally, hedge fund investors have needed to hold cash to ensure the availability of funds during these intervals. In today’s low interest rate environment, any cash holding can hurt portfolio returns. With the introduction of liquid alternative strategies, investors can potentially earn hedge fund-like returns during these transition periods, effectively putting cash to work earlier and mitigating the impact of cash drag on the portfolio.
Using liquid alternatives to capitalize on tactical opportunities

The lengthy subscription and redemption process for investing in hedge funds has historically made it difficult to quickly reallocate funds to take advantage of short-term opportunities that may exist between sectors. With the introduction of liquid alternative strategies, investors can tactically allocate among industry sectors, quickly increasing or decreasing exposures.

In addition, because they do not invest in hedge funds, liquid alternatives can provide full position level transparency and daily valuations, making it easier for investors to strategically determine when to increase and decrease exposures. And given that only liquid securities are used, investors are also able to obtain short exposure to a hedge fund strategy as well as obtaining long exposure.

The ability to short a hedge fund sector can be very useful to an investor who wants to reduce his existing hedge fund exposure quickly without losing capacity with managers, or while he is waiting for redemptions to be paid. In addition, shorting via liquid alternatives effectively enables investors to hedge their hedge fund exposure should the need arise.

Using liquid alternatives to manage risk

Hedge fund managers typically cite several reasons for providing limited transparency, including the need to keep investment information confidential to maintain their competitiveness. While there is some truth to those arguments, this limited transparency also has downsides. For example, it makes risk management of a hedge fund portfolio more difficult and it may also create hard-to-detect “style drift” scenarios.

To help mitigate these risks, investors may choose to diversify their hedge fund portfolios across a number of managers. Diversification offers benefits but can be subject to limitations. First, gaining exposure to a larger number of hedge funds can be difficult due to high minimum investment levels and due diligence requirements. Second, the wide dispersion among individual hedge fund manager performance can cause difficulties in identifying managers that consistently provide alpha (see chart below).

Liquid alternatives seek to deliver returns comparable to those of a hedge fund index or a diversified portfolio of hedge funds and, as such, can be used to gain a liquid, transparent core hedge fund exposure. Investors can then invest in a few high-conviction hedge funds as satellite investments to provide alpha. This combination effectively performs like a well-diversified hedge fund portfolio that requires less due diligence work and that can potentially provide improved transparency and more liquidity than a standard hedge fund portfolio.

Wide performance dispersion can cause difficulties in identifying consistent alpha

2012 Dow Jones Credit Suisse Hedge Fund Index Return Dispersion

The bulk of returns shown as the dark blue boxes (one standard deviation from the mean in either direction). The black lines represent dispersion from 1st to the 99th percentiles.

Source: Credit Suisse, Data from December 31, 2011, to December 31, 2012.

Historical performance indications and financial market scenarios are no guarantee for current or future performance.
How do investors gain access to liquid alternatives?
Given the growing popularity of liquid alternatives, these strategies are increasingly being offered in UCITS (Undertaking for Collective Investment inTradeable Securities) format with relatively low investment minimums. Such regulated structures can serve as an efficient, accessible solution for investors seeking hedge fund-like exposure, including those who did not previously have access. They can also aid in reducing counterparty, illiquidity and reputational risks and providing increased transparency for more efficient risk management.

In light of the challenges facing investors in the post-financial crisis environment, and given the large number of roles that liquid alternative strategies can play in investors’ portfolios, we believe they will become an increasingly important tool for investors seeking to harness liquidity to optimize the performance of their portfolios.
Contacts

**German-speaking Switzerland**

**Institutional Clients**
Stefan Gregor Meili
Giesshübelstrasse 30
P.O. Box 800
CH-8070 Zurich
Tel: +41 44 335 77 91
stefan.meili@credit-suisse.com

Sandro Gschwend
St. Leonhardstrasse 3
P.O. Box 564
CH-9001 St. Gallen
Tel: +41 71 226 36 39
sandro.gschwend@credit-suisse.com

Daniel Ammon
Bundesplatz 2
P.O. Box 5366
CH-3011 Bern
Tel: +41 31 358 54 78
daniel.ammon@credit-suisse.com

Hans Stimimann
Schwanenplatz 8
P.O. Box 2648
CH-6002 Luzern
Tel: +41 41 419 15 15
hans.stimimann@credit-suisse.com

André Winkler
St. Alban-Graben 1–3
P.O. Box 2653
CH-4002 Basel
Tel: +41 61 266 73 35
andre.winkler@credit-suisse.com

**Wholesale Distribution**
Reto Eisenhut
Sihltcity – Kalanderplatz 1
CH-8070 Zurich
Tel: +41 44 333 29 52
reto.eisenhut@credit-suisse.com

**French-speaking Switzerland**

**Institutional Clients**
Jean-Raymond Wehrli
Rue de Lausanne 11–19
CH-1201 Geneva
Tel: +41 22 392 21 15
jean-raymond.wehrli@credit-suisse.com

Christian Waser
P.O. Box 5705
CH-1002 Lausanne
Tel: +41 21 340 26 64
christian.waser@credit-suisse.com

**Wholesale Distribution**
Markus Stecher
Rue de Lausanne 11–19
CH-1201 Geneva
Tel: +41 22 392 22 25
markus.stecher@credit-suisse.com

**Ticino**

**Institutional Clients**
Antonio Mantarro
Via G. Vegezzi 1
P.O. Box 6900
CH-6901 Lugano
Tel: +41 91 802 59 06
antonio.mantarro@credit-suisse.com

**Wholesale Distribution**
Markus Stecher
Rue de Lausanne 11–19
CH-1201 Geneva
Tel: +41 22 392 22 25
markus.stecher@credit-suisse.com