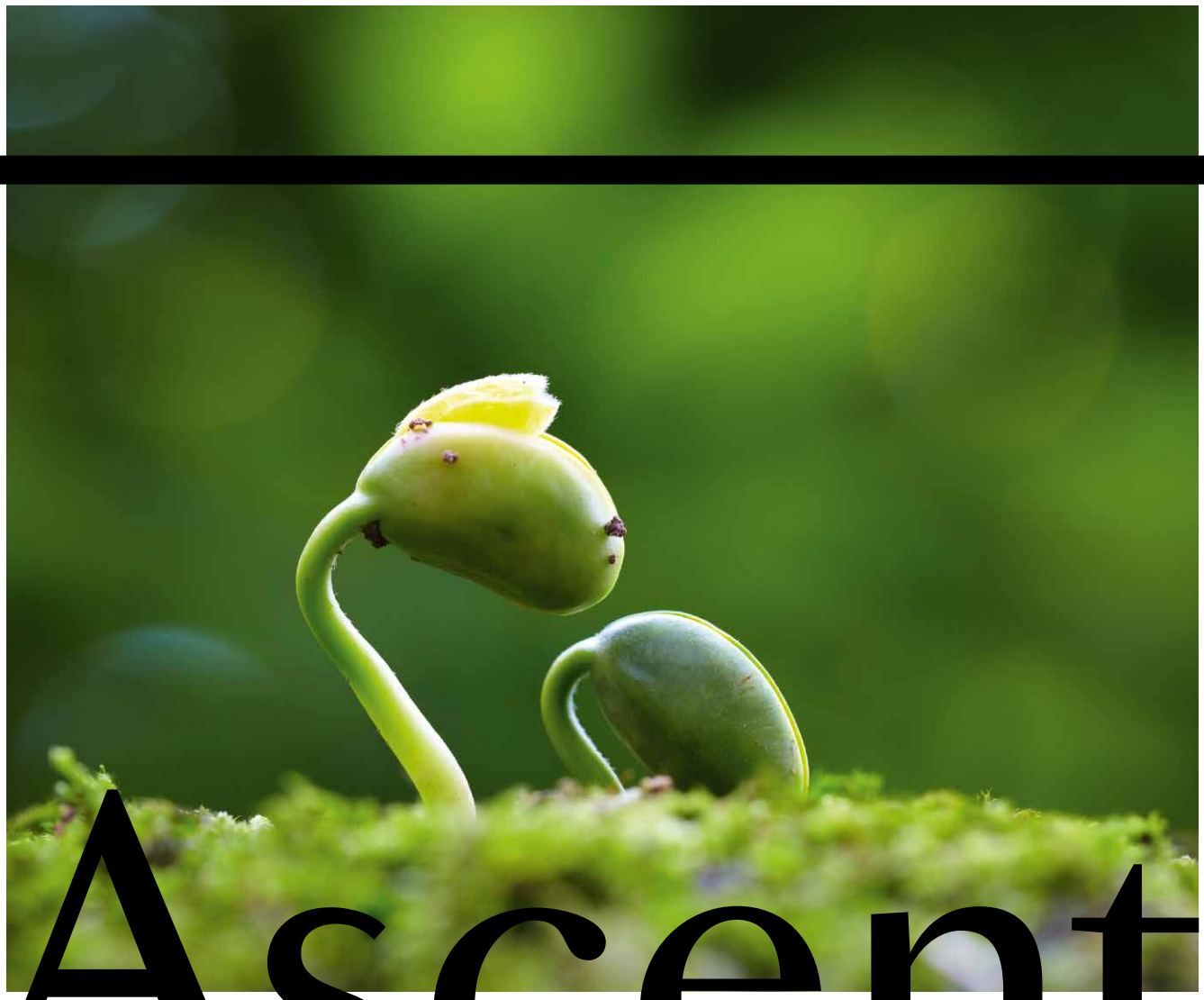
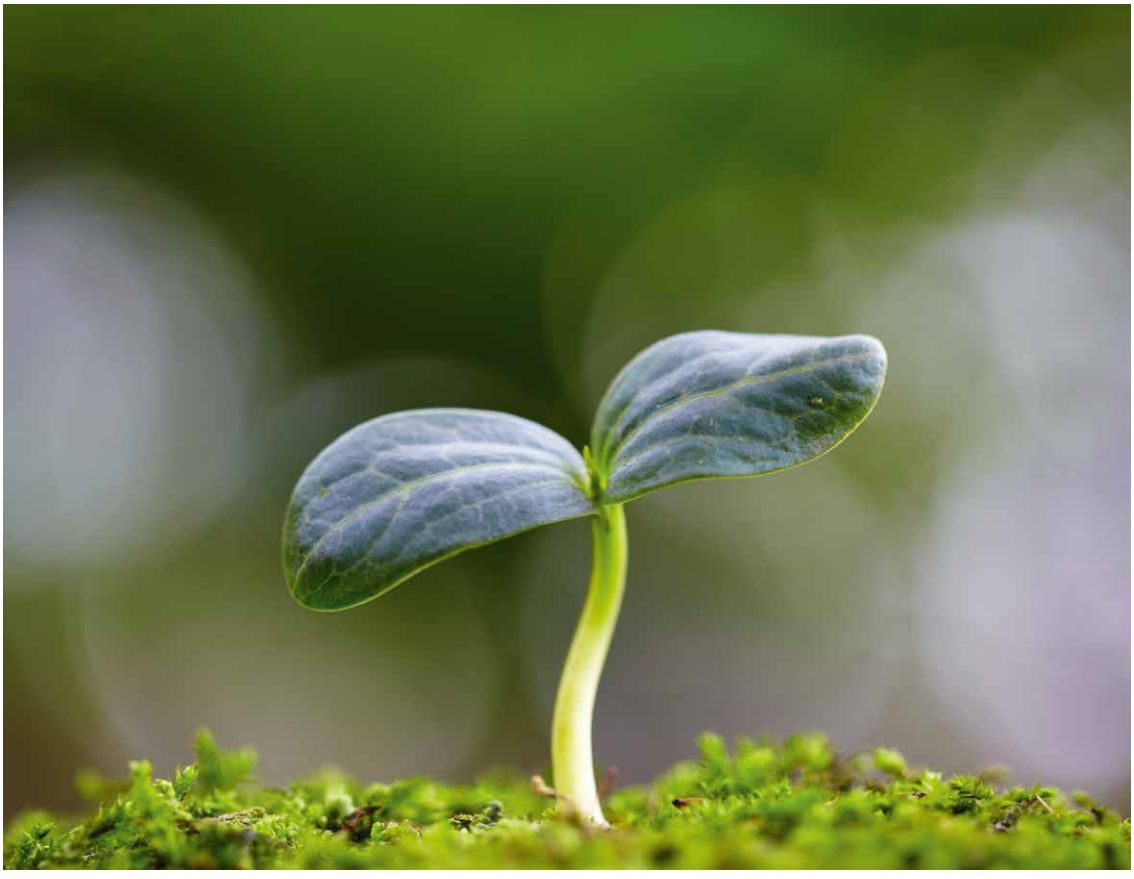
Degroof Petercam | Institutional Asset Management

Spring 2016



Ascent



The information contained in this mail and attachments (hereafter the 'documents') is provided for pure information purposes only.

Present documents don't constitute an investment advice and doesn't form part of an offer or solicitation for shares, bonds or mutual funds, or an invitation to buy or sell the products or instruments referred to herein.

Applications to invest in any fund referred to in these documents can only validly be made on the basis of the current prospectus or simplified prospectus, together with the latest available annual or semi-annual report and accounts.

All opinions and financial estimates herein reflect a situation on the date of issuance of the documents and are subject to change without notice. Indeed, past performances are not necessarily a guide to future performances and may not be repeated.

Degroof Petercam Asset Management SA has made its best efforts in the preparation of this document and is acting in the best interests of its clients, without carrying any obligation to achieve any result or performance whatsoever. The information is based on sources which we believe to be reliable. However, it does not represent that the information is accurate and complete.

Present document may not be duplicated, in whole or in part, or distributed to other persons without prior written consent of Degroof Petercam Asset Management SA. This document may not be distributed to private investors and is solely restricted to institutional investors.

Dear Reader

Welcome to the first 2016 edition of Ascent, Degroof Petercam Institutional Asset Management's newsletter on its research and management capabilities.

Our cover article focuses on European small caps. Small caps outperform large caps over the long term while, given the inefficiencies of the universe, small cap managers have a bigger chance of outperforming their benchmark. In this article we aim to more specifically discuss the attractiveness of investing in European quality small caps as we manage a Quality focused Europe small cap fund.

Secondly, we investigate carry. the carry risk factor explains much of the cross-sectional variation in average excess returns and is related to macroeconomic risk factors. The authors shed more light on this issue and come up with some interesting and thought-provoking conclusions.

Finally, in the Responsible Investment Section we shed some light on the fact that over the last 12-18 months, institutional investors have become increasingly aware of their role and responsibility in the fight against climate change. Specifically, climate change has been identified as a key risk, more particularly an economic risk

We hope you will enjoy this edition, and would be more than happy to have feedback on your side.

Sincerely,

Jan Longeval
Co-CEO Institutional
Asset Management

Hugo Lasat
Co-CEO Institutional
Asset Management

Carry. A free lunch, or picking up pennies in front of a steamroller?

Quant Solutions - Macroeconomic Research

Frederiek Van Holle

Michiel Verstrepen

Macroeconomic variables are easy scapegoats when explaining past movements in the foreign exchange markets. Popular scapegoats during the last decade often related to the monetary policies of the world economy's most important central banks. In fact, monetary policy fundamentals seem, at first glance, to explain much of the major currencies' relative performance during the last decade.

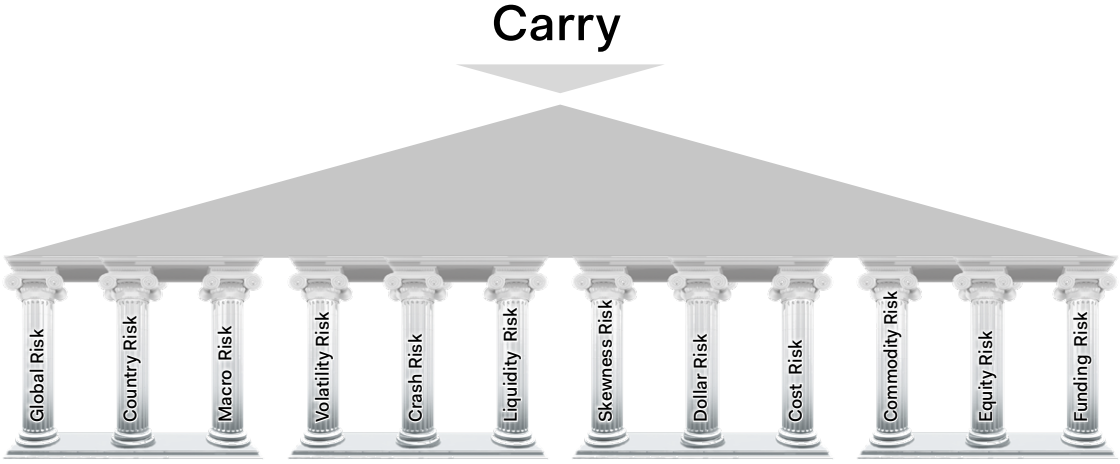
For example, let us look at the evolution of the euro versus the dollar over the last few years. Monetary policies in the US and the Eurozone impacted real interest rate differentials, which correlated strongly with the euro/dollar exchange rate. The similarities observed between the euro/dollar rate and the real interest rate differentials can be explained by the uncovered interest rate parity condition. If this condition holds, arbitrage prevents exchange rate movements from deviating too far from real interest rate differentials. European nominal interest rates were intensely influenced at the beginning of 2015. At that time the persistent weakness in European economic activity, combined with most indicators of actual and expected inflation in the Eurozone drifting towards historical lows, required a forceful monetary policy response from the ECB. In January 2015, the ECB delivered this response and announced, in addition to existing measures, the expanded asset purchase programme, better known as quantitative easing (QE). While the full effects of QE are yet to be evaluated, one of the channels through which this unseen monetary expansion should work is the risk-taking transmission channel of monetary policy. Specifically, the central bank hopes to push economic agents into a spending/borrowing spree to stimulate the real economy. Nominal rates were pulled into negative territory and the euro responded with a sell-off, going from 1.25 dollars in December to 1.05 dollars in January.

At the time of writing this article, the three-month euro interest rate had fallen as low as -41.5 basis points. So, this means that holding euros effectively costs money. However, not all currencies' short term remuneration has fallen below zero. The New Zealand dollar (NZD), for example, still offers a three-month interest rate of 1.98%. Some investors might be tempted to lock in this absolute interest rate differential of 2.39% between the euro and the NZD by borrowing in euro and investing the proceeds in NZD.

However, this transaction, also known as a carry trade is, is not without risk. The covered interest rate parity states that the NZD should depreciate over the investment horizon and the currency effect should fully offset the gain obtained via the interest rate differential. In practice, the theoretical currency offset does not happen or even tends to move in the opposite direction, thereby adding to the gain via the pure interest rate differential. This forward bias puzzle is still an active subject of debate within the academic community and is the basis of the carry trades. Carry trade investors who borrow in low-yielding currencies and invest in high-yielding currencies systematically earn a premium.

Empirical research seems to confirm the existence of the carry premium. Sarno and Schmeling (2014), for example, test whether lagged spot rates reveal something about future interest rate differentials. They find that the difference in interest rate between the countries that depreciated the most and the ones that appreciated the most against the USD is significantly positive, confirming the carry trade premium. More recently, empirical research indicates that the carry premium is not a risk-free arbitrage premium, but is in fact a risk premium. Different explanations are put forward to justify the carry risk premium: (asymmetrical) exposure to macroeconomic risk, exposure to volatility and (liquidity related) crash risk and infrequent trading to name some.

Lustig et al. (2011) construct currency portfolios based on their currency forward premia and find that currency risk premia are large and



time-varying and that cross-sectional differences in interest rates convey information about the relative riskiness of the currencies. Moreover, a single global factor, measured by the average interest rate difference across portfolios between the US and foreign currencies, explains the cross-sectional currency risk premium. The higher a country's interest rate, the more exposed its currency is to **global risk**. The authors provide a theoretical framework where they show that the risk premium on individual currencies consists of two parts: a **country-specific risk** factor and a common factor. The first factor reflects the average excess return of a US investor who buys all the foreign currencies (the dollar risk factor), while the second factor represents the excess return of the carry trader who buys the high-yielding currencies while shorting the low-yielding currencies (the HMLFX factor). Since the different portfolio betas relative to the first factor are similar and close to one, this risk factor accounts for almost no cross-sectional variation in the currency portfolios' excess returns.

Alternatively, the carry risk factor explains much of the cross-sectional variation in average excess returns and is related to **macroeconomic risk** factors. *Low-yielding currencies provide a hedge against domestic business cycle risk by appreciating relative to the home currency when times get bad, thereby providing additional disposable income for the local investor*[1]. To give an example, a US investor that holds positions in CHF- or JPY-denominated assets is not necessarily ignoring the higher interest rates paid by USD-denominated fixed-income securities. The US investor could harbour doubts about the US business cycle, and might want to hedge himself against a weakening of the cycle or another macroeconomic (US-specific) risk event. The CHF or JPY could provide such a hedge, because when the macroeconomic situation in the US deteriorates the CHF or JPY tends to appreciate against the USD, allowing the US investor to hedge consumption risk. The European sovereign debt crisis of 2011 was another good example of a macroeconomic risk that motivated a position in non-euro-denominated fixed-income assets for a Eurozone-based investor, despite the lower yield. Thus, the hedging capacity justifies lower expected excess returns for the lower-yielding currencies.

Using movements in macro variables to explain foreign exchange movements may be easy with hindsight, but selecting the right macroeconomic factors to forecast future foreign exchange movements is a rather difficult affair. Bachetta and Wincoop (2004) and Bachetta and Wincoop (2013) provide a so-called "scapegoat" theory of exchange rates in which traders tend to give excessive weight to certain variables during some period based on "rational confusion". A macroeconomic variable is more likely to become a scapegoat the larger the unexpected currency movement and the more this variable deviates from its long-term equilibrium value. Over time, different observed variables can be taken as scapegoats so that the weights attributed to macro variables change.

[1] See for example, Lustig and Verdelhan (2007) for the US, De Santis and Fornari (2008) for an international perspective and Dobrynskaya (2014).

"At the time of writing this article, the three-month euro interest rate had fallen as low as -41.5 basis points. So, this means that holding euros effectively costs money!"

© European Central Bank/Robert Metsch

Menkhoff et al. (2012) use a similar setup as Lustig et al. (2011) and apply a **global exchange rate volatility factor** as a proxy for the global risk factor. *These authors find that carry trades tend to select currencies subject to high volatility risk.* Sorting currencies by their exposure to past volatility innovations reproduces the cross-section of carry trade portfolios. High-yielding currencies are negatively related to unexpected changes in global currency volatility. As a result, *carry trades perform badly in market turmoil regimes and the high carry returns are a compensation for this risk.* Although FX volatility is correlated with illiquidity proxies, volatility dominates liquidity risk. Finally, FX volatility risk is related, but not equivalent to the carry trade factor HMLFX. The authors conclude that both global FX volatility risk and HMLFX are powerful factors to explain the cross-section of currency risk premia.

Another volatility-based explanation for the anomalous carry returns comes from possible **crash risk** or related Peso problems embedded in the carry trade. This Peso problem is the phenomenon in which the market prices in the small possibility of a large change.

Keith Sill (Sill (2000)) from the Philadelphia Fed describes the Peso problem as follows: *"Sometimes, the present depends on the future: people carry umbrellas when there is a forecast for stormy weather; advance purchase airfares are higher for holiday-travel times, when passenger traffic is expected to be heavy. In each of these cases, and many others we can think of,* ***what people expect will happen affects how they behave today.*** *Exchange rates and prices of assets such as stocks and bonds depend not only on the most likely future outcomes but also on possible but less likely outcomes. Sometimes a possible outcome can be so different from today's conditions that asset prices, which incorporate such extreme possibilities, make financial markets look flawed, even if they are not. Economists call such a condition a "peso problem."*

Brunnermeier and Pedersen (2009) relate the carry premium to (asymmetrical) crash risk induced by **liquidity issues**, i.e., carry trades suffer from substantial negative skewness. Their empirical research indicates that high interest rate differentials predict speculator positions. These speculators are more sensitive to liquidity constraints, which in turn can lead to a rapid unwinding of their positions, resulting in a currency crash. *An increase in global risk (measured by the VIX) and a deterioration in liquidity (measured by the TED spread) seem to coincide with reductions in speculator carry positions and carry trade losses.* The returns of diversified carry trade portfolios remain negatively skewed, indicating that these risk factors cannot be diversified away. Similar results are found by Koijen et al. (2015).

Mancini et al. (2013) calculate a variety of liquidity measures for the currency market based on a detailed dataset of high-frequency currency data. They document that liquidity varies over time and across currencies. However, they also find

evidence of a large co-movement in the liquidity of currencies over time, suggesting a possible role as a risk factor for the carry trade returns. The authors find that the *typical funding (low interest rate) currencies exhibit negative liquidity betas, thus providing a hedge against liquidity risk*. Conversely, high-yielding currencies tend to have low liquidity and have positive exposure to liquidity risk. Similarly to Brunnermeier and Pedersen (2009), these authors relate changes in liquidity ("liquidity spirals") to currency crashes. During episodes of improving liquidity, the opposite sign of the liquidity risk betas for low- and high-yielding currencies generate high carry trade returns because the (low-) high-yielding currencies (depreciate) appreciate. *However, it seems that during carry unwinding episodes, liquidity also drops which, in turn, aggravates the crash in the investment currencies*. The authors compute their IML risk factor, which is a tradable risk factor defined as the return difference between a portfolio of the two most illiquid currencies and a portfolio with the two most liquid currencies. They find that the IML factor is closely related to the HMLFX factor representing global risk.

Rafferty (2012) relates carry returns to a **global skewness risk** factor in currency markets (instead of currency specific skewness as in Brunnermeier and Pedersen (2009)). Since his global skewness factor becomes more negative the faster the correction in the currency market, it is a measure of crash risk. He finds that the beta to the global skewness factor of portfolios based on sorted currencies according to their forward discount increases from the low-yielding currencies to the higher-yielding currencies. *The higher expected return on the portfolios with higher-yielding currencies is compensation for bearing the global skewness risk embedded in these currencies*. The portfolio with the lowest-yielding currencies even has a negative beta which relates to the safe haven characteristic of these funding currencies.

However, studies that rely on currency options data do not fully support the crash risk hypothesis. Burnside et al. (2011), for example, find that a hedged version of the carry trade, which protects the investor against large, adverse currency movements, yields only slightly lower pay-offs compared to the standard carry trade. They then conclude that the peso problem cannot account for the significant carry trade alpha. Similarly, Jurek (2014) has a more nuanced conclusion: hedging the tail risk of currency carry portfolios that are not constrained to be dollar-neutral using options does not fully eliminate the carry premium. However, he finds that the excess returns of the hedged carry strategy portfolios that are constrained to have zero USD exposure drop to zero. This indicates that, besides a crash risk component, the carry return also reflects a dollar risk factor. The crash risk hypothesis is further weakened by the observation that carry trade drawdowns are auto-correlated and that they occur over substantial periods of time, suggesting that extreme negative returns do not happen suddenly[2].

Lustig et al. (2011) and Kent and Hodrick (2014) also identify this dollar risk factor. The latter argue that the **time-varying dollar exposure** is at the core of the carry trade puzzle. They confirm that the dollar risk factor is unrelated to crash risk given its insignificant skewness.

Finally, closely related to liquidity are the **transaction costs**. Bacchetta and Van Wincoop (2010) relate the forward premium puzzle to transaction costs and the resulting infrequent portfolio decisions. They develop a theoretical model that allows for a trade-off between actively managing a currency portfolio (which implies higher costs) and managing the currency portfolio on an infrequent basis. They define the so-called "threshold cost", which is the level of costs where the expected welfare gain from active currency management is equal to the costs involved and the investor becomes indifferent between active or passive management. They find that the threshold cost is lower than the actual cost charged by the active management industry. *As a result, it is optimal to make infrequent portfolio decisions, which results in a delayed overshooting of the currency. This in turn introduces substantial excess return predictability in the currency returns.*

Bakshi and Panayotov (2013) test the time-series predictability of the carry trade returns for the G-10 currencies. Besides average currency volatility and liquidity, they add a new variable based on **changes in a commodity price** index. They include this risk factor, arguing that commodity investing

[2] See for example, Jurek (2014), Kent and Hodrick (2014) and Melvin and Taylor (2009).

often coincides with increased risk appetite and that four of the G-10 currencies are considered as commodity currencies (CAD, NOK, NZD and AUD). For these countries, commodities constitute a significant component of their exports. World commodity prices are set on a global scale, such that these prices can be considered exogenously determined for these small economies. Shocks in world prices affects their terms of trade, and their currencies may be adjusted accordingly. A recent example of such an exogenous shock was observed in the fourth quarter of 2014, when oil prices rapidly fell as global supply exceeded demand. Here, the subsequent slump in energy and commodity prices initially weighted on the commodity currencies. Meanwhile, speculative positions in these currencies were common instruments to provide investors exposure to a potential recovery in global commodity prices. Using predictive regressions, they find that their commodity and global currency volatility factors exhibit strong predictive power for the carry trade returns at the monthly horizon, while the evidence for their global liquidity measure is mixed. Interestingly, applying a carry trade strategy conditional on the predicted return of the carry strategy improves both the Sharpe ratio and negative skewness.

Lettau et al. (2014) relate the carry returns to **downside equity market risk**. Although it is recognised that currencies yielding high interest rates have higher market betas than portfolios of low-yielding currencies, these unconditional market-beta differentials are insufficiently large to explain the magnitude of carry trade returns. The authors argue that the exposure of the carry trade to the return on the market is larger, provided that the market return is down. Moreover, the down-market beta differential between the high and the low interest rate sorted portfolios, combined with a high price of down market risk, is sufficient to explain average returns to the carry trade. Dobrynskaya (2014) comes to a similar conclusion using a variety of downside risk measures. Interestingly, the upside market betas tend to decrease when one moves from the low-yielding currency portfolios towards the higher-yielding ones. Moreover, the downside market beta factor seems to dominate Menkhoff et al. (2012)'s FX volatility factor in a horse race.

Bekaert and Panayotov (2015) further decompose the carry trade strategies into **good and bad carry trades**. They construct symmetric carry trades and study the implications of excluding certain currencies from the carry trade based on their so-called enhancement rule. This simple rule uses, at each period, the available historical information to compute the Sharpe ratios of their benchmark case (the G10 carry trade portfolio) and specific portfolios

"The current low-yield environment in the developed markets could push investors seeking yield towards higher-yielding currencies."

where, potentially, currencies are excluded subject to an improvement of the Sharpe ratio relative to the benchmark case. In this way, the composition of the carry trade portfolios is adjusted dynamically. The results indicate that excluding three or more currencies of the G-10 currencies improves both the Sharpe ratio and the skewness (which even becomes positive when 7 currencies are excluded). This finding contrasts with Brunnermeier and Pedersen (2009), who concluded that skewness cannot be diversified away for carry portfolios. Moreover, the same currencies are typically excluded. Surprisingly, the prototypical carry currencies - NZD, AUD and NOK as investment currencies and CHF and JPY as funding currencies - are typically excluded from the analysis. The authors show that the *"bad" carry trades* (based on the currencies that are typically excluded by the enhancement rule) *drive the typical benchmark carry trade characteristics*, while the "good" carry trades (based on currencies that are least excluded by the enhancement rule) have less negative skewness, higher Sharpe ratios and a lower correlation with down regimes in the G-10 benchmark case.

A horse race between the good carry trade factor, the HMLFX factor of Lustig et al. (2011) and the FXVol factor of Menkhoff et al. (2012) reveals that the HMLFX is dominated by the good carry trade factor. The results for the FXVol factor, however, are inconclusive. In addition, introducing a time-varying equity market beta conditional on the equity market volatility regime reveals that bad carry trades have much higher betas when equity market volatility is higher. Good carry trades, on the other hand, have much more limited equity regime dependence. Moreover, explaining the carry returns by a two-factor model with up and down equity markets reveals that bad carry trades have significant exposure to down equity markets and insignificant exposure to up markets, while the opposite is true for good carry trades. This indicates that *the crash risk factor of Brunnermeier and Pedersen (2009) might be solely coming from the bad carry trades* (and hence can be avoided). Finally, concerning the importance of the USD risk factor, the authors exclude the USD from their good trades and include the dollar in the bad trades. They find that, on the one hand, the Sharpe ratio only slightly improves and the negative skewness actually worsens for the bad trades. On the other hand, for the good trades, the lack of USD is important, but this does not turn a good trade into a bad trade. This finding that USD plays an important role in carry trades is consistent with, for example, Lustig et al. (2011),Jurek (2014) and Kent and Hodrick (2014), although here the message is more nuanced since good trades survive the absence of the USD.

Christiansen et al. (2011) investigate the **time-variation in the systematic risk** of carry trades. They apply a multi-factor model where the parameters are regime dependent. They find that carry trade returns are more positively related to equity returns and more negatively related to bond risks as the volatility of the foreign exchange market increases. So, in times of higher foreign exchange volatility, the systematic risk of the carry trade increases and it loads more heavily on risky assets.

Conclusion

The current low-yield environment in the developed markets could push investors seeking yield towards higher-yielding currencies. Although the strategy that borrows in the low-yielding currency and invests in the high-yielding currency tends to generate significant excess returns, this reward does not come without risk. A combination of time-varying risk factors exposes the investor to country-specific as well as global (macroeconomic) risk factors. The presence of negative skewness in the distribution of the carry strategy returns reveals the potential risk of a sudden crash occurring, wiping-out the gradually-obtained carry return. In fact, periods of increased risk aversion seem to have a major impact on this kind of strategy. A dynamic rebalancing of the carry portfolio with systematic risk adjustment might improve the risk profile of the strategy. In normal times, the carry premium looks like a free lunch. Nevertheless, as volatility increases your carry portfolio could morph into a disaster scenario, a situation which emphasises the importance of strict risk budgeting.

References • Bacchetta, Philippe, and Eric Van Wincoop, 2010, Infrequent portfolio decisions: A solution to the forward discount puzzle, American Economic Review 100, 870-904. • Bachetta, P., and E. Wincoop, 2004, A scapegoat model of exchange rate determination, American Economic Review, Papers and Proceedings 94, 114-118. • Bachetta, P., and E. Wincoop, 2013, On the unstable relationship between exchange rates and macroeconomic fundamentals, Journal of International Economics 91, 18-26. • Bachetta, P.and Eric Wincoop, and Toni Beutler, 2009, Can parameter instability explain the Meese-rogoff puzzle?, NBER International Seminar on Macroeconomics 125-173. • Bakshi, G., and G. Panayotov, 2013, Predictability of currency carry trades and asset pricing implications, Journal of Financial Economics 110, 139-163. • Bates, J.M., and C.W.J. Granger, 1969, The combination of forecasts, Operational Research Quarterly 20, 451-468. • Bekaert, Geert., and George Panayotov, 2015, Good carry, bad carry, Columbia Business School Research Paper. URL: http://ssrn.com/abstract=2600366 or http://dx.doi.org/10.2139/ssrn.2600366 • Brunnermeier, Markus K., and Lasse H. Pedersen, 2009, Market liquidity and funding liquidity, Review of Financial Studies 22, 2201-2238. • Burnside, C., M. Eichenbaum, I. Kleshchelski, and S. Rebelo, 2011, Do peso problems explain the returns to the carry trade?, Review of Financial Studies 24, 853-891. • Campbell, J., and S. Thompson, 2008, Predicting excess stock returns out of sample: can anything beat the historical average?, The Review of Financial Studies 21, 1509-1531. • Cenedese, Gino, Richard Payne, Lucio Sarno, and Giorgio Valente, 2015, What do stock markets tell us about exchange rates?, Review of Finance (Forthcoming). URL: Available at SSRN: http://ssrn.com/abstract=2467707 • Cheung, Y.-W., and Menzie, 2001, Currency traders and exchange rate dynamics: a survey of the U.S. market, Journal of International Money and Finance 20, 439-471. • Cheung, Yin-Wong, Menzie David Chinn, and Antonio G. Pascual, 2004, Empirical exchange rate models of the nineties: Are they fit to survive?, International Monetary Fund, Working Paper 04/73. • Christiansen, C., A. Ranaldo, and P. Söderlind, 2011, The time-varying systematic risk of carry trade strategies, Journal of Financial and Quantitative Analysis 46, 1375-1389. • Connolly, Robert, Chris Stivers, and Licheng Sun, 2005, Stock market uncertainty and the stock-bond return relation, Journal of Financial and Quantitative Analysis 40, 161-194. • De Santis, Roberto A., and Fabio Fornari, 2008, Does business cycle risk account for systematic returns from currency positioning? the international perspective, Available at SSRN - http://ssrn.com/abstract=1140663 or http://dx.doi.org/10.2139/ssrn.1140663. • Della Corte, P., T. Ramadorai, and L. Sarno, 2014, Volatility risk premia and exchange rate predictability, Journal of Financial Economics (Forthcoming). URL: http://ssrn.com/abstract=2233367 • Della Corte, P., Lucio Sarno, and Ilias Tsiakas, 2009, An economic evaluation of empirical exchange rate models, Review of Financial Studies 22, 3491-3530. • Dobrynskaya, Victoria, 2014, Downside market risk of carry trades, Review of Finance 24, 1-29. • Fama, E. F., 1984, Forward and spot exchange rates, Journal of Monetary Economics 14, 319-338. • Fratzscher, M., Dagfinn Rime, Lucio Sarno, and Gabriele Zinna, 2015, The scapegoat theory of exchange rates: The first tests, Journal of Monetary Economics 70, 1-21. • Geert, Bekaert, and Robert J. Hodrick, 2012, International Financial Management (Prentice Hall). • Henriksson, Roy D., and Robert C. Merton, 1981, On market timing and investment performance. ii. statistical procedures for evaluating forecasting skills, Journal of Business 54, 513-533. • Jurek, J.W., 2014, Crash-neutral currency trades, Journal of Financial Economics 113, 325-347. • Kent, Daniel, and R. J.and Lu Z. Hodrick, 2014, The carry trade: Risks and drawdowns, NBER Working Paper. • Koijen, R.S.J., T. J. Moskowitz, Pedersen L.H., and E.B. Vrugt, 2015, Carry, Fama-Miller Working Paper. • Lettau, M., M. Maggiori, and M. Weber, 2014, Conditional risk premia in currency markets and other asset classes, Journal of Financial Economics 114, 197-225. • Lustig, H., N. Roussanov, and Verdelhan Adrien, 2011, Common risk factors in currency markets, The Review of Financial Studies 24, 3731-3777. • Lustig, H., N. Roussanov, and Adrien Verdelhan, 2014, Countercyclical currency risk premia, Journal of Financial Economics 111, 527-553. • Lustig, Hanno, and Adrien Verdelhan, 2007, The cross section of foreign currency risk premia and consumption growth risk, American Economic Review 97, 89-117. • Mancini, L., A. Ranaldo, and J. Wrampelmeyer, 2013, Liquidity in the foreign exchange market: Measurement, commonality, and risk premiums, The Journal of Finance 68, 1805-1841. • Meese, R. A., and K. Rogoff, 1983, Empirical exchange rate models of the seventies. do they fit out of sample?, Journal of International Economics 14, 3-24. • Melvin, M., and M. Taylor, 2009, The crisis in the foreign exchange market, Journal of international money and Finance 67, 681-718. • Menkho_, L., M. Schmeling, and A. Schrimpf, 2012, Carry trades and global foreign exchange volatility, Journal of Finance 67, 681-718.

European small caps: a focus on quality pays off

In a previous article we discussed the attractiveness of the European small cap asset class. It is one of the few segments of the equity market in Europe where, in our view, you can enjoy a so-called double alpha: small caps outperform large caps over the long term while, given the inefficiencies of the universe, small cap managers have a bigger chance of outperforming their benchmark. In this article we aim to more specifically discuss the attractiveness of investing in European quality small caps as we manage a Quality focused Europe small cap fund.

Senior Portfolio Managers

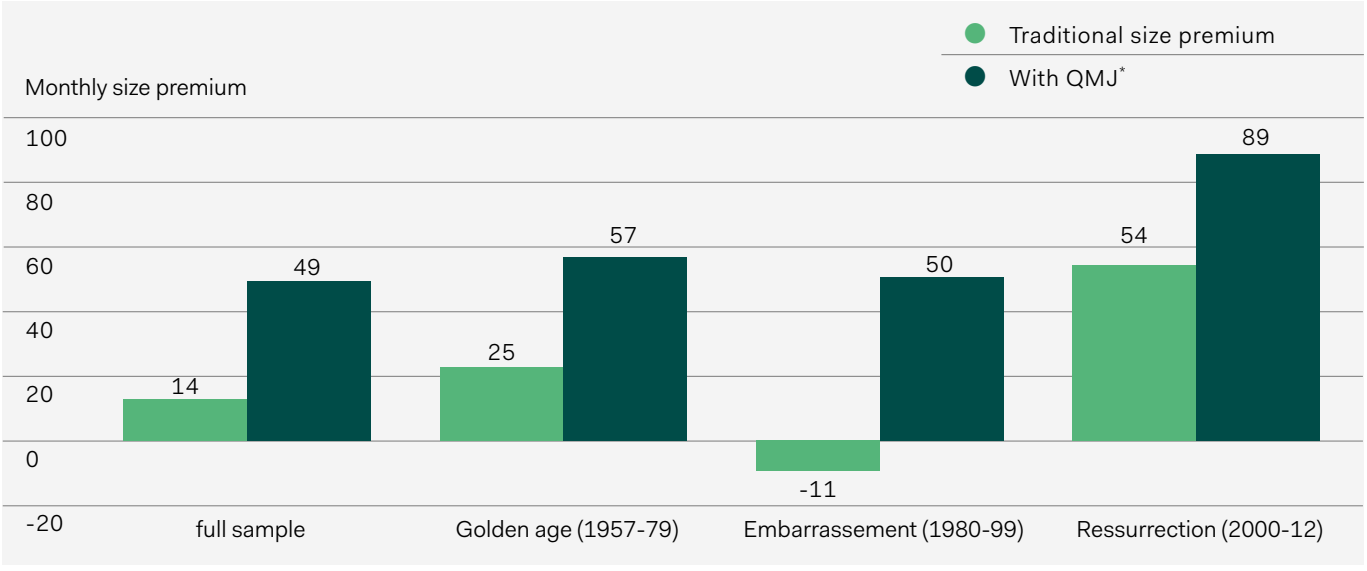
Bart Geukens

Gilles Lequeux, CEFA

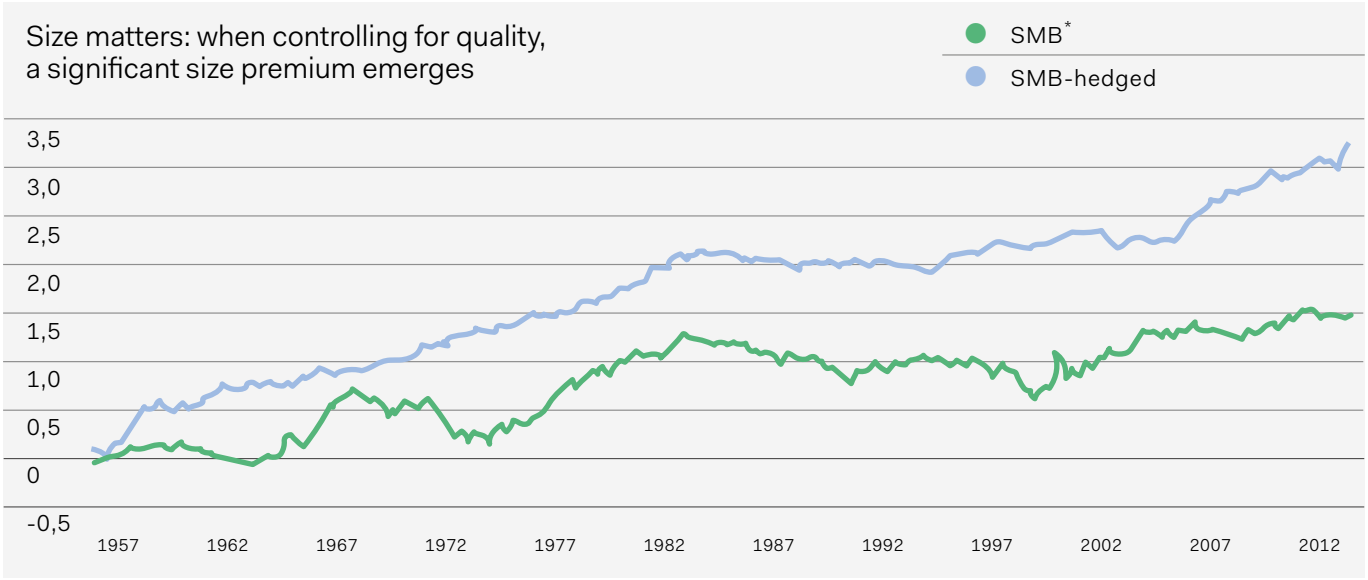
The size effect was discovered in the early 80's by Banz, who found that in the US small cap stocks had higher average returns than large stocks, a relation not accounted for by market beta.
The discovery of the size effect had a major impact on investment practice and led to the creation of small cap indices (the Russell 2000 index, the reference small cap index in the US, was created in 1986), an entire category of investment funds, and served as a cornerstone for mutual fund classification (into small/large and later value/growth).

There has been a lot of criticism, however, regarding the size effect. Since its discovery in the early 1980s, the small cap effect has seemed less statistically significant (small caps underperformed between 1981 and 1999, and have strongly outperformed since), it appears to be driven by very illiquid, uninvestible stocks, and it is predominantly a US and "January" phenomenon.

In January 2015 a new extensive quantitative study called 'Size Matters if you Control Your Junks' was published by academics and famous fund managers (namely Cliff Asness, Andrea Frazzini, Ronoen Israel, Tobias Moskowitz and Lasse H. Pedersen). The study is one of the most extensive studies on the size effect ever done, since it considered a sufficiently long-term sample of US stocks (since 1957, across different industry groups, taking into account different measures of size, etc.) and a broad sample of global stocks (it was carried out in 24 countries).



"Size matters, if you control your junk." Authors: Asness, Frazzini, Israel, Moskowitz, Pedersen. * Quality minus Junk



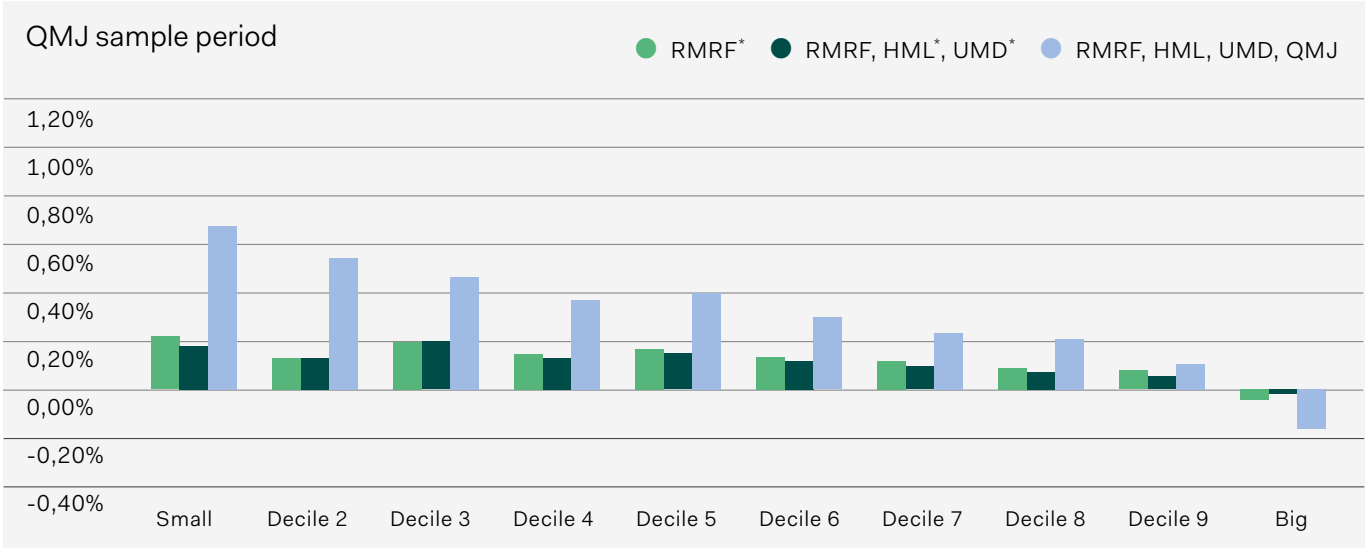
"Size matters, if you control your junk." Authors: Asness, Frazzini, Israel, Moskowitz, Pedersen. *Small Minus Big

The study confirms the common criticism levelled at the standard size factor, namely a weak historical record in the US and an even weaker track record internationally, with the size effect proving marginally significant at best.

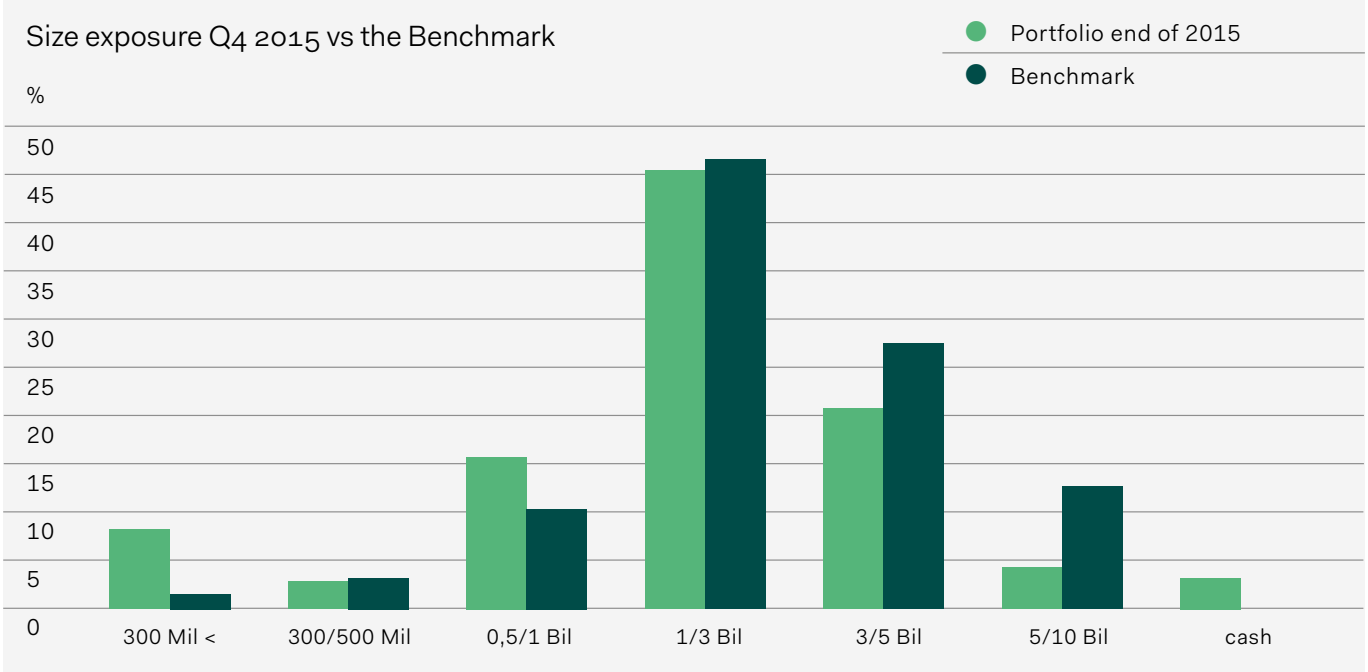
The study nevertheless discovered that the standard size effect suffers from a size-quality composition effect, i.e. small caps have a much higher exposure to low quality/junk stocks, while quality outperforms junk stocks over the long term (Fama and French (2014)). Quality was measured in the study via different quantitative criteria such as high profitability, high profit growth, low risks and stability of earnings. Size was measured via market cap, book assets, sales, book equity, PP&E (property, plant and equipment) and number of employees.

When controlling for quality/junk, the authors found a large and significant size premium (it more than doubles the average performance of the size factor, as well as its statistical significance) present and stable across time and the months of the year (no reliably detectable differences across time from July 1957 to December 2012), across all industries, across 23 out of the 24 analysed international equity markets and across different measures of size not based on market prices.

The study showed that, within each size quintile, quality outperformed junk stocks while small cap quality stocks outperformed large cap quality stocks. It is in addition a very monotonic relationship, i.e. the alphas steadily increase as we move from big to smaller stocks.



"Size matters, if you control your junk." Authors: Asness, Frazzini, Israel, Moskowitz, Pedersen.
* RMRF = CAPM 1 factor model. HML = Book to Market Ratio. UMD = momentum factor



"Size matters, if you control your junk." Authors: Asness, Frazzini, Israel, Moskowitz, Pedersen.

More studies will probably follow on how this small cap quality effect can best be explained, but one of the reasons in our view is the fact that the longevity of value generation (or value destruction) is often misjudged by financial market participants as regards small caps. Two financial 'modelling' assumptions in the calculation of the fair value of a company are often at the origin of this situation. Firstly, excess returns are temporary and companies are presumed to incur their cost of capital over time. Secondly, growth is presumed to phase out to anaemic levels over time. These assumptions are consequently incorporated in a 'static' valuation model to obtain fair values. However, **excess returns and growth characteristics can often be sustained for longer than assumed in these static valuation models**. Ceteris paribus, this should result in the outperformance of those companies creating value over this time frame since **the prolonged generation of excess returns (or the spread of the ROCE over the cost of capital) and growth will progressively be captured when those static valuation models are 'rolled' over in time**. Consequently, this continuously misjudgement of the longevity of value generation by financial market participants offers exploitable market inefficiencies for investment strategies focusing on sustainable value creators, for example the Degroof Petercam Europe small cap fund.

The Degroof Petercam small cap fund* is indeed well positioned to benefit from this phenomenon because:

1. It is a 'real small cap fund'
2. We have set up a very disciplined research process that aims to select the highest quality companies through both quantitative (based on ROCE, stability of returns, etc.) and qualitative screening (checklist: 25 questions on key investment attributes such as business quality and management strength).
   It is important to select the winners, but it is just as important to avoid the structural losers in small caps.

The danger with quality companies is that you run the risk of overpaying for quality. For this reason we are very strict as regards valuation. Over the years, free cash flow yield has proven to be one of the most rewarding valuation yardsticks to look at in small caps, and we have therefore developed a proprietary valuation tool based on free cash flow generation. The Degroof Petercam Europe small cap fund has, for many years already, focused on under-researched, smaller quality companies.

* Petercam Equities Europe Small Caps

Decarbonisation of portfolios: an efficient solution to climate change?

In the months preceding the 21st Climate Change Conference held in Paris in December 2015, quite a few number of initiatives were talked about to tackle carbon risk.

Responsible Investment Strategist

Ophélie Mortier

Over the last 12-18 months, institutional investors have become increasingly aware of their role and responsibility in the fight against climate change. Specifically, climate change has been identified as a key risk, more particularly an economic risk. In parallel with the commitment made by the political world to combat climate change and work towards an energy transition - Mark Carney, the Governor of the Bank of England, has identified climate change as a threat to financial stability - new concepts such as carbon risk, stranded assets and the decarbonisation of portfolios have emerged.

Faced with the complexity of the issue the financial world has not been found lacking in innovation, with one proposed solution being the concept of so-called portfolio decarbonisation.

This implies:

1. Measuring the exposure of the portfolio
2. Assessing the related risk, taxation and stranded assets aspects
3. Reducing the risk, i.e. reducing exposure or fully divesting

As regard measuring the exposure of the portfolio, the Montreal Pledge is one of the initiatives in that regard. Backed by the Principles of Responsible Investment, it promotes the principle of the publication of carbon risk to enable a better assessment of that risk. The pledge has already been signed by more than one hundred asset owners.

We may also applaud the French initiative implemented through Article 173 of the law relating to the energy transition towards green growth, which imposes upon institutional investors a reporting requirement on carbon risk and energy transition. The devil is in the details here, and keeping the goal as simple and accessible as possible will ensure success in raising awareness, generating responsibility and therefore bringing about efficient measures and solutions to deal with the climate change challenge.

This is quite a complex matter, and the methodologies are still in their infancy. Specifically, specialists talk about emissions of type 1, 2 and 3, so about the emissions relating to the product manufacturing process (types 1 and 2) and the emissions relating to the product's use (type 3), which are a lot more difficult to measure. However, for some sectors this difference is quite significant. For instance, in the automobile sector carbon emissions mostly come from a vehicle's use rather than the manufacturing process. In the materials sector the carbon emissions resulting from the manufacturing of insulation may be quite high, but the insulation itself or the specific end-product will significantly lower carbon emissions compared to those generated by the use of the existing, and less efficient, product.

"Investors face an important issue in carbon risk as it represents an economic threat, and because legislation relating to this issue is growing in keeping with mounting activism."

Most calculation methods do not take into consideration type 3 emissions, as they are currently too difficult to measure. The only option here would be a series of hypotheses used to endlessly extrapolate the data.

But please do not get me wrong: the fact that these methodologies are not perfect is not an excuse for inertia. If carbon emissions data are comparable - with regard to an investment universe or over time - then the methodologies, whether they are incomplete or not, remain perfectly comparable. Nevertheless, the data must be interpreted with caution and one should not jump to conclusions.

Investors face an important issue in carbon risk as it represents an economic threat, and because legislation relating to this issue is growing in keeping with mounting activism. The objective is that asset holders take action to deal with climate risk.

Hence, measuring risk remains a challenge in and of itself, and the concept of stranded assets is a good illustration of this aspect. While it is a subject which so far has not been widely discussed by financial analysts in the most impacted sectors, the approaches and hypotheses used are food for thought and question the status-quo. Although this concept is mostly associated with companies active in the oil and energy sector, it remains relevant for the economies of countries for which the growth model is primarily based on the consumption of fossil energy reserves, such as Venezuela, Russia or other countries strongly dependent on fossil energy sources.

Let's assume that, in a perfect world, the calculation method is perfect, or at least comparable, and that this makes it possible to measure the carbon risk to which a portfolio is exposed.

Is it therefore not perfectly reasonable for investors to aim to reduce and manage this risk? Some consider that the next step for investors will be risk management and portfolio construction aligned with a scenario of a 2 °C temperature rise, implying a reduction of carbon emissions in the portfolio's investments.

It is a worthy cause for investors. But how does one reduce the carbon footprint of a portfolio? Interesting observation taken from the audience at a Conference held on the topic in Paris at the end of last year: equity markets are based on the demand and offer principle. The seller of high carbon emitting stock sells to a buyer, who therefore increases its own carbon footprint. Globally, so at the planetary level, this is a zero-sum game.

Calculation methods for carbon exposure are becoming increasingly sophisticated and these days make it possible to identify the elements which contribute carbon to the portfolio. However, it is appropriate to question the true role of a portfolio manager in the light of such a risk analysis. After all, the portfolio manager must manage the portfolio while respecting the investment guidelines of the mandate with which it has been entrusted. In addition, it must manage portfolio liquidity and diversification in order to optimise the risk/return profile. On top of this sizeable challenge it would then also have to reduce carbon risk, possibly with quantitative objectives over time. It is a daunting task as one cannot assume that the first objective will be realised simultaneously with the second one, as they are each situated in a different time frame: the risk/return ratio is still too often judged in the short term, while the decarbonisation of the portfolio will take place over time by means of progressively adapted criteria. There is little doubt that someone will argue that the planet requires immediate

Figure 1: Major emission pledges announced ahead COP21

Country / Region	Pledge
China	Lower emissions 60-65% per unit of GDP by 2030E vs 2005 levels
United States	Reduce emissions 26-28% below 2005 levels by 2025E
European Union	Reduce emissions 40% below 1990 levels by 2030E
Russia	Reduce emissions 25-30% below 2005 levels by 2030E
Japan	Reduce emissions 26% below 2013 levels by 2030E
Korea	Reduce emissions 37% below 'business-as-usual' levels in 2030E
Canada	Reduce emissions 30% below 2005 levels by 2030E
Mexico	Reduce emissions 22% below 'business-as-usual' levels in 2030E
Australia	Reduce emissions 26-28% below 2005 levels by 2030E

Source: World Bank 2015, UBSe - Note: Table ranked by current contribution to global emissions

action and that gradual and progressive adjustments will not be sufficient to reverse this trend. However, we all have our own expertise and knowledge, which nevertheless does not mean that investors do not have a role to play. Quite the contrary. Each investment decision has an impact, and investors must take responsibility by selecting the best-performing and sustainable companies going forward. By definition these companies will emit lower amounts of greenhouse gases, and will make it possible to reach the objective, namely to decarbonise portfolios. On the one hand, companies these days have no other choice but to decarbonise their manufacturing processes and products and opt for the least-polluting solutions.

On the other hand, as technology matures companies will gradually improve their score and the carbon footprint of portfolios will decrease naturally, even if their exposure remains unchanged over time.

By engaging with companies about changing their business models in the face of these clear challenges, responsible investors are taking action to make it possible to understand the difficulties for all players in the various fields of expertise. They are doing their part to ensure that the decarbonisation of the economy becomes a reality.

Figure 2: Current renewable targets for selected areas

Country / Region	Target
United States	30 state-level renewable portfolio standards (typically 15-25% renewable share)
European Union	27% renewables in gross final energy consumption by 2030E
China	20% of non-fossil energy in total supply by 2030E
India	100GW of solar PV, 60GW of wind, 10GW of bioenergy by 2020E
South Africa	17.8GW renewables by 2030E
Brazil	20% non-hydro renewables in power generation mix by 2030E
Korea	11% of primary energy from renewables by 2030E
Australia	33TWh from large-scale renewable power plants by 2020E
Mexico	Less than 50% fossil-fuel in power generation by 2050E
Indonesia	31% of primary energy from new renewable sources by 2050E

Source: IEA 2015, INDC, UBSe

Social media

TWITTER FR
@BDP_FR

TWITTER NL
@BDP_NL

TWITTER EN
@BDP_EN

Tweets on company news, and on our experts' views regarding macroeconomics, institutional asset management and socially responsible investing.

LINKEDIN
linkedin.com/company/degroofpetercam

It features more than just job openings. It is also a channel for sharing company news and making accessible our expert's views.

Institutional sales team

HEAD OF INTERNATIONAL SALES

Tomás Murillo
t.murillo@degroofpetercam.com
T +32 2 229 62 56

ITALY & TICINO

Alessandro Fonzi, CFA
a.fonzi@degroofpetercam.com
T +39 2 86337 223

Aniello Pennacchio
a.pennacchio@degroofpetercam.com
T +39 2 86337 316

SWITZERLAND

Frédéric Guibaud, CFA
frederic.guibaud@petercam.ch
T +41 22 929 72 23

FRANCE

Ives Hup
i.hup@degroofpetercam.com
T +33 1 73 44 57 46

Thierry Minet
t.minet@degroofpetercam.com
T +33 1 73 44 57 48

Gonzague Ruskone
g.ruskone@degroofpetercam.com
T +33 1 73 44 56 66

Mariem Mhadhbi
m.mhadhbi@degroofpetercam.com
T +33 1 73 44 56 65

LUXEMBOURG

Bernard Jans
b.jans@degroofpetercam.com
T +32 2 229 62 51

GERMANY

Thomas Meyer
t.meyer@degroofpetercam.com
T +49 69 27 40 15 295

Melanie Fritz
m.fritz@degroofpetercam.com
T +49 69 27 40 15 243

SPAIN & LATAM

Amparo Ruiz Campo
a.ruiz@degroofpetercam.com
T +34 91 572 03 66

Victor Asensi
v.asensi@degroofpetercam.com
T +34 91 572 03 66

THE NETHERLANDS, SCANDINAVIA, UK

Marco van Diesen
m.vandiesen@degroofpetercam.com
T +32 2 229 62 72

FUND DISTRIBUTION BELGIUM

Thomas Palmblad (Head of the Team)
t.palmblad@degroofpetercam.com
T +32 2 287 93 27

Frederic Collett
f.collett@degroofpetercam.com
T +32 2 287 93 06

Olivier Gigounon
o.gigounon@degroofpetercam.com
T +32 2 287 91 84

RELATIONSHIP MANAGERS INSTITUTIONAL PORTFOLIO MANAGEMENT

Catherine Champagne
c.champagne@degroofpetercam.com
T +32 2 287 92 60

Gaetan D'Hondt
g.dhondt@degroofpetercam.com
T +32 2 229 62 44

Hilde De Jaeger
h.dejaeger@degroofpetercam.com
T +32 2 287 95 84

Bernard Jans
b.jans@degroofpetercam.com
T +32 2 229 62 51

Yves Lepercq, CFA
y.lepercq@degroofpetercam.com
T +32 2 287 90 62

Michel Van Meerbeek
m.vanmeerbeek@degroofpetercam.com
T +32 2 287 98 60

Degroof Petercam | Institutional Asset Management