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Talk of carbon dioxide reduction boosting credit returns is hot air

There are good reasons to adopt a carbon neutral investing philosophy – just don't expect it to have a major effect on alpha generation. By *Ulf Erlandsson*

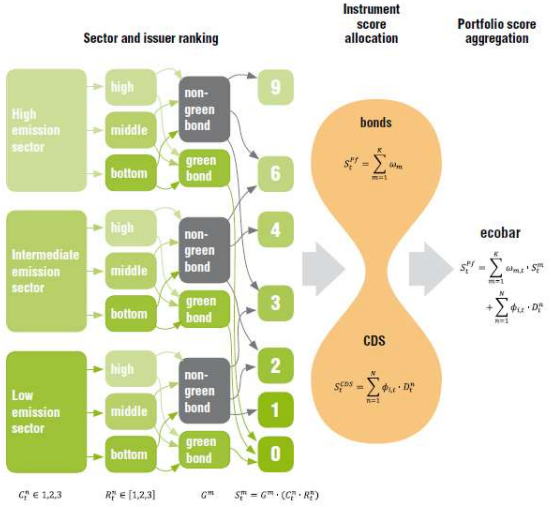
There is a clear shift towards ESG (environmental, social and governance) strategies being incorporated in investment mandates. Although it is easy for fund managers to commit to some sort of ESG procedure, more demanding investors are starting to ask for quantitative ESG impact studies on investments. Carbon footprinting, the process whereby a certain share of a company's carbon dioxide emissions is assigned to an investment, has become a popular way to tackle this.

Footprinting equity portfolios is straightforward in isolation. If you own 1% of the share capital, you should assume 1% of a company's CO_2 emissions. Translating the process into credit is not trivial, however. First, how do we avoid double counting CO_2? This requires some form of weighted distribution between debt and equity. For example, given a certain capital structure a company's equity should assume 60% of total CO_2 emissions, whereas the debt part of the capital structure should take on 40%. But the research on how to develop such a distribution model is minimal to nonexistent. Second, we lack theory on how to allocate CO_2 within debt. How do we assign CO_2 to a one-year versus a 30-year bond, a senior bond versus a junior bond or on public bonds versus loans?

The ESG space is also largely in denial around some important trading factors, for instance, by not including derivatives in the accounting. A positive basis trade (selling the cash bond and selling protection on CDS) would end up CO_2 reductive in all the systems we have seen so far. In the same way, shorts through CDS or repo are not accounted for, although they might seem like even more important trades for CO_2 reduction than even green bonds. Also, some ESG approaches are unwieldy for trading purposes. Systems to support ESG-based strategies need to be real-time, transparent and as non-constraining as possible.

Lastly, there seems to be an almost ideological conviction in the alpha capacity of ESG-based strategies, although this is largely unfounded in academic literature. Besides, there is a strong argument that if unconstrained funds were convinced of the pure alpha of ESG factors, they would invest in it.

Ecobar scoring system



The purpose of this report is to illustrate and offer potential solutions to some of these issues. To do this, we introduce the ecobar*model, which solves some problems as well as having attractive trading and alpha features.

Ecobar scoring system

The ecobar model takes a relative approach to the CO_2 intensity of a credit portfolio. It is a scoring system that does not try to measure the direct footprint of the portfolio (for example, in "tons of CO_2 per $ million of bonds") but instead shows the CO_2 of a portfolio versus either a benchmark portfolio or an expectation-neutral one (see diagram, left).

The universe of companies is partitioned based on relative CO_2 emission between sectors and within sectors. A company with high emissions relative to its sector will receive a score of three, and if it is in a relatively high-emission sector it will also be given another score of three. The product of these figures determines its total ecobar score. Where there is statistical evidence of a correlation between balance sheet size and CO_2 emissions, we normalise. Green bonds are scored as zero regardless of which sector the issuer resides within.

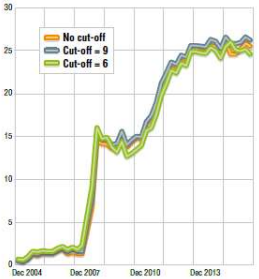
Having a good ecobar score on your portfolio should not constrain your P&L potential

Modified duration contribution (MDC) is used to weigh positions' contributions to the total score. Through these, we can generate ecobar weights where we can produce spread duration numbers for CDS, for example. This approach normalises for leverage, so that it is the tilt of the portfolio that is reflected in the ecobar score; it is better to have a very green book with 10-times leverage than a dirty unlevered book, although with a traditional approach these two portfolios could have the same absolute CO_2 footprint. The MDC also allows us to account for short risk positions, either through CDS or repo, simply by inverting the ecobar score for positions with negative duration contributions.

Alpha potential

Given this setup, ecobar scores are straightforward to generate for historical data. They allow us to look at whether the ESG factor in itself is correlated, or not, to alpha. We run a test on the large-cap part of the AP4 traded credit portfolio to study if moves in the ecobar score are related to excess returns. Our results show that there was a clear decrease of CO_2 intensity in the portfolio over the sample period as per the decreasing ecobar. Over the same timeframe significant alpha was generated, with a cumulative excess P&L averaging 4.5% per annum. Despite this, we find no significant correlation between positive alpha and decreasing CO_2.

DIEM cumulative returns under ecobar cut-off rules (%)



In a second test of the correlation between ecobar scores and alpha, we look at the performance of the dynamic indicator of equity momentum (DIEM) under investment constraints based on ecobar scores. DIEM is a cross-section momentum model that was originally constructed back in 2008**, which uses equity and CDS data to generate a market neutral long-short portfolio. It has been utilised as a systematic single-name selection tool at AP4. We test to see if the strategy retains alpha when high ecobar (CO_2 intense issuers) are excluded from the long risk leg of the trade (and the other longs are scaled up to the same amount).

Results show that constrained long rules see a significant ecobar score reduction, but no systematic loss of alpha, which lends credibility to the lack of correlation between CO_2 reduction and excess return potential (see chart, left).

Conclusions

ESG proponents often argue for the pure alpha capacity of the ESG factor. The economist Eugene Fama would frown upon such a proposition. What we find instead is a more feasible yet strong argument: pursuing the ESG factor is uncorrelated to alpha. This means that portfolio managers can apply CO_2 reduction strategies (with some inherent 'good' in them) without sacrificing alpha potential. Having a good ecobar score on your portfolio should not constrain your P&L potential, nor should it be a driving factor for making returns.

Ecobar is designed to meet the needs of traditional market agents, rather than ESG dedicated ones. For example, it would be trivial to produce an ecobar score for a trading pod at a bank. It's transparent and fast enough to run in live markets. The non-parametric approach makes it robust to the curve-balls credit data often throws at us.

* Erlandsson, CO_2 Balanced Ranking
** See Alpha generation in volatile times, Barclays Capital Research (2008).
Ulf Erlandsson is expected to join Granit Fund in Stockholm having worked as a senior portfolio manager at AP4 since 2009.
The full paper is at http://bit.ly/2t1vxWq.

