Previously published in the European Credit Alpha
8 February 2019

Systematic single-name screens – review

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It has been two years since we reviewed our systematic single-name screens, so this week we evaluate the out-of-sample performance, which continues to be compelling on the 'rich' (ie, short risk) screen. We also extend the investible universe and update our optimised indicators for selecting future cheap/rich screens based on this.

We introduced our systematic single-name screens in 2013 (*Systematic single-name screening*, 15 March 2013) and have been publishing updated screens every four weeks since – this week we publish the 77th iteration in the CRV section and also take the opportunity to review the performance since we last updated the screens (*50th systematic single-name strategy*, 13 January 2017) and to re-optimise the screens for future updates.

For background, we originally introduced the systematic single-name framework as a tool to take advantage of single-name CDS dynamics versus iTraxx Main, ie, "the market". The idea was, and continues to be, to identify and exploit metrics that capture the propensity of individual credits to exhibit momentum, resulting in over/undershooting versus Main and equities. Regular screens capturing this type of dynamic should be useful for investors who are looking to take risk in single-name CDS or identify individual names that are attractive shorts. Moreover, we wanted to implement the screening process as an algorithm, ie, in a manner that is both mechanical and transparent.

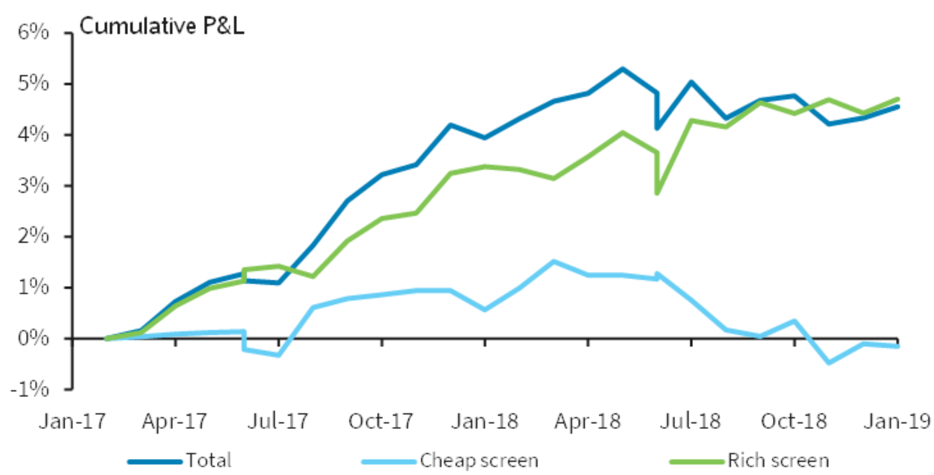
We refer to the CRV section for the regular update of the rich and cheap screens along with the P&L for the screens identified four weeks ago.

Evaluating performance – skewed towards the 'rich' screen

Figure 1 shows the cumulated P&L for the cheap and rich screens, as well as a combined strategy of equal weighting the two screens, since our last review in January 2017.

The rich screen has generally performed well, generating 4.7% of unlevered returns over the two-year period (c.2.47% on an annualised basis and a Sharpe ratio of 1.58x, see Figure 2). The cheap screen on the other hand has generated a slightly negative return of -0.1% over the same period, having suffered a string of losses in the second half of 2018.

FIGURE 1
Historical P&L for rich and cheap screens



Note: The Total is an equal-weighted average of the Rich and Cheap screens. Source: Barclays Research

FIGURE 2

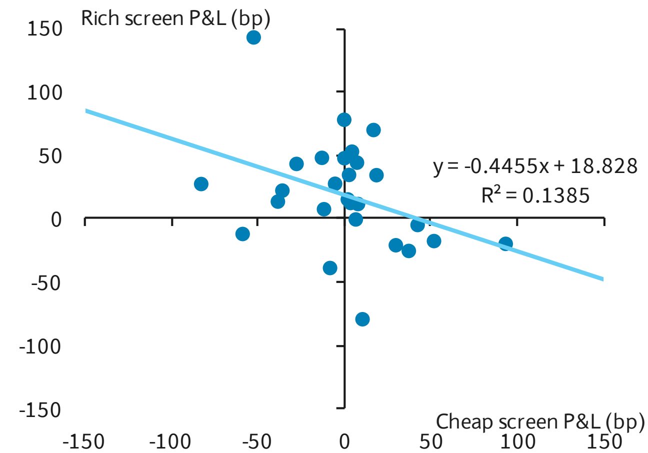
Performance and risk statistics (returns, bp)

	Cheap screen	Rich screen	Total
Average	5	247	126
Median	41	196	129
Std.dev.	131	156	81
Sharpe	0.04	1.58	1.56
95% VaR	-57	-35	-32

Note: Annualised returns and standard errors. Source: Barclays Research

FIGURE 3

Cheap versus rich screen



Source: Barclays Research

The historical P&L for the two screens is negatively correlated (Figure 3), resulting in a Sharpe ratio of 1.56x for the combined screen. Although there is some diversification benefit from the negative association – reflected in the lower standard deviation of 81bp – the rich screen has still produced the Sharpe ratio that is marginally higher.

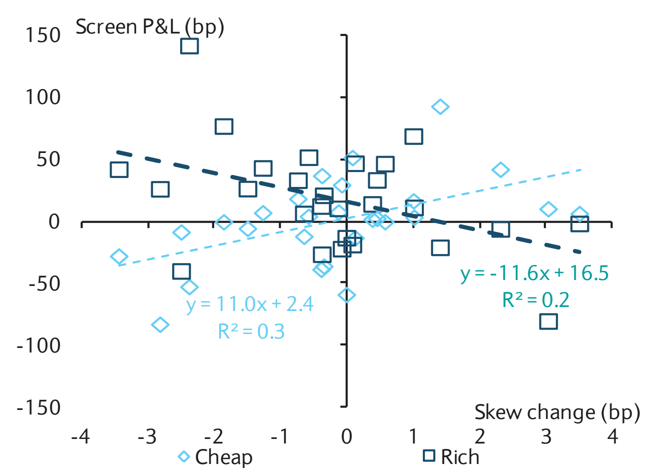
Moreover, it is hard to overlook that the cheap screen underperformed the rich screen as the market sold off in the second half of last year (Figure 1). Given that both screens are beta hedged with Main, we would not necessarily expect them to be correlated to the market – however, the index skew also plays a role in the effectiveness of the hedges.

Recall that the screens are implemented with single-name CDS, but hedged with the index. As such, an increase in the skew means that the index has underperformed its single-name constituents, which we would expect to be associated with a gain in the index hedge – ie, the skew should be positively related to the P&L of the cheap screen, and vice versa for the rich screen. This is indeed also what we have observed (Figure 4).

Given that the cheap and rich screens have opposing sensitivities to the skew, it is comforting to see that the total P&L has a very low correlation to the skew (Figure 5).

FIGURE 4

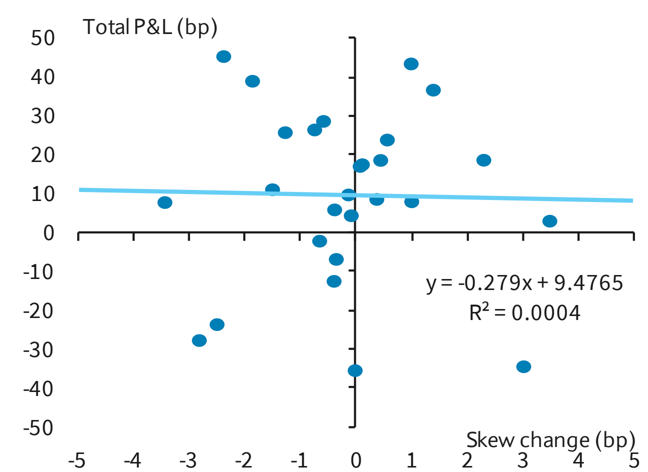
Cheap and rich screen P&L versus index skew



Source: Barclays Research

FIGURE 5

Total P&L versus skew: near-zero correlation



Source: Barclays Research

Re-optimising the indicator pairs

The underlying rationale behind our framework is to develop a screen for rich and cheap names using objective measures. We do this by identifying metrics that capture the propensity of individual credits to exhibit momentum, resulting in over/undershooting versus iTraxx Main and equities. Moreover, we wanted to implement this strategy as an algorithm, ie,, in a manner that is mechanical and transparent.

We first describe the methodology of our study. We then define the relevant indicators for screening for rich and cheap names and analyse their performance as stand-alone indicators. We then look at optimal combinations of indicators, by examining weightings between them. Finally, we present the optimal pair of indicators for screening for rich and cheap names.

Methodology

To ensure comparability of the performance of various rich/cheap screens, we measure the strategy performance in a unified framework with the following characteristics:

- Test period: Jan 2014 – now; rebalancing: every four weeks;
- Scope: 5y CDS;
- Signal calculation: pick top or bottom 10 names based ranking from the indicator – or ranking of weightings of indicators;
- Restrictions of eligible names on a rebalancing period: for the screen for cheap names, the spread must be below 1000bp, whereas in the screen for rich names, the spread must be at least 40bp. In either case, the spread ratio to iTraxx Main must be below 7x;
- Sizing: beta-adjusted (using 1-year data) versus the benchmark index (iTraxx Main);
- Transaction costs: we include the bid/ask cost for rebalancing single-name trades; and
- Performance metrics: total P&L delta-hedged versus iTraxx Main (including carry), annualised Sharpe ratio and 95% VaR of P&L observed on rebalance days.

Beyond the choice of data and period, the only inputs we provide to our screening tool are measurement periods for the indicators of Figure 6.

Defining indicators

We define a series of metrics meant to capture the relative perception of richness/cheapness of a given name – in the absence of further information of the specific situation. Listing these in Figure 6, we define them such that high (low) scores indicate cheap (rich) names.

There are three types of metrics: credit only – some only relying on the development in the spread itself, others relating spread moves to the CDS index – equity only, and finally credit-equity metrics.

FIGURE 6
Credit- and equity-based technical indicators

Metric	Definition
Credit-based indicators	
Percentage from highs	[2-year Max Spread – Current Spread]/[2-year Max – Min Spread]
Moving averages	([40-day MA spread] – [100-day MA spread])/ [Current spread]
Spread momentum	[Current spread – 1.5yr average spread]/[1.5yr standard deviation]
Spread percentage change	[5-mth spread change]/[Spread 5-mths ago]
Spread per beta	[Current spread]/[1.5-year beta vs. index]
Performance versus benchmark	1.5-year z-score vs. iTraxx Main
Equity-based indicators	
Stock performance versus SX5E	1.5-year price z-score vs. SX5E
Stock price moving averages	([20-day MA price] – [100-day MA price])/[Current price]
Stock price percentage change	[200-day price change]/[Price 200-days ago]
Stock price momentum	[Current price – 2-year average price]/[2-year standard deviation]
Equity-credit based indicators	
Credit-equity	1.5-year spread z-score vs. stock price
Credit-equity (log price)	1.5-year spread z-score vs. log stock price

Note: "MA" is short for moving average. Source: Barclays Research

Updating and extending the universe

We also update and extend the universe to include names that have been in either Main or Crossover at any point between Series 26 and 30. We previously used a universe of single-name CDS contracts that were in Main at the time we defined the screens. Consequently, we now extend the investible universe from 130 to 176 names.

We continue to hedge with Main and employ our spread thresholds, as detailed above, meaning that the newly-included Crossover names will not enter the screens unless they fulfil these criteria, which will limit excessive risk taking in these names.

Notably, the indicator-level P&L in Figure 7 below appear robust to the change – if anything, the performance improves as we extend the investible universe.

Individual indicators – results

Having defined the indicators it makes sense to examine the subsequent performance of the top 10 names screening as rich or cheap. With the methodology above we present the results for each indicator (Figure 7).

Some indicators are truly bad at generating delta-hedged P&L in their own right. Were it not for our use of these metrics in the next step (see the next section), it would be worthwhile ignoring them.

FIGURE 7
Historical P&L profile of individual screens

	Cheap screen vs Main			Rich screen vs Main		
Label	Total P&L	Sharpe ratio	VaR	Total P&L	Sharpe ratio	VaR
Credit-based indicators						
Percentage from highs	-58	-0.08	-68	-498	-0.38	-101
Moving averages	-1,064	-0.72	-191	-763	-0.44	-117
Spread momentum	-583	-0.55	-113	-541	-0.78	-68
Spread percentage change	-643	-0.59	-94	-566	-0.29	-152
Spread per beta	-472	-0.46	-63	516	0.20	-196
Performance versus benchmark	-684	-0.75	-103	-613	-0.88	-57
Equity-based indicators						
Stock performance versus SX5E	-616	-0.89	-59	-66	-0.07	-60
Stock price moving averages	-615	-0.37	-138	675	0.47	-74
Stock price percentage change	-622	-0.47	-142	1,009	0.67	-86
Stock price momentum	-355	-0.61	-46	249	0.28	-84
Equity-credit based indicators						
Credit-equity	-381	-0.56	-82	-5	-0.01	-51
Credit-equity (log price)	-437	-0.78	-75	127	0.19	-52

Note: Showing the performance of each indicator when used to identify both rich and cheap screens. Total P&L, delta-hedged vs Main in bp of notional over the period. Sharpe ratio annualized. Monthly 95% VaR in bp of notional. P&Ls are calculated from January 2014. Source: Barclays Research

Optimising combinations of indicators for rich and cheap screens

To the extent that the different indicators produce cheap/rich candidates that are different, it makes sense to explore mixing the indicators together to produce a combined signal. We can do this in a general way by focussing on two indicators and weighting them together.

As an example, suppose name "A" ranks 1 and 50, respectively, in two indicators with a weighting ratio of 25:75; it has a combined rank of 37.75. Whereas name "B" has a rank of 50 and 1 with the same weighting; it has a combined rank of 13.25 and therefore has a better combined rank than name "A" – as the second indicator has a higher weighting.

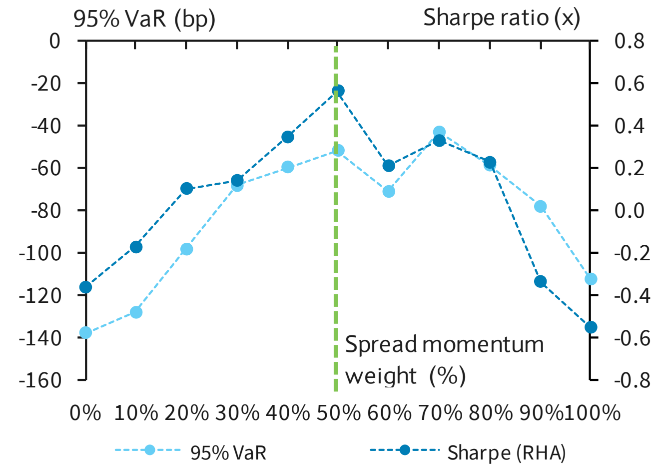
This turns out to offer significant improvements to the efficiency of screening for rich/cheap names, akin to "traditional" diversification: mixing two strategies that in themselves are (potentially) profitable but with less than perfect correlation tends to produce similar returns but with lower volatility.

We illustrate this concept for the pair of indicators that we ultimately pick as the optimal pairs for screening for rich and cheap names. For the pair of indicators for the cheap screen (Figure 8) we show the Sharpe ratio vs 95% VaR for different combinations of weights for the two metrics. The benefit of mixing the indicators is evident: individually the two indicators are not interesting – showing a negative Sharpe ratio – but in combination they show a Sharpe ratio of 0.56 while decreasing the VaR as well.

The conclusion for the optimal pair for the rich screen is not quite as 'nice' (Figure 9); the combined indicators have a Sharpe ratio that is slightly better than the best of the individual indicators, but the VaR is not improved materially versus most of the alternative weightings.

FIGURE 8

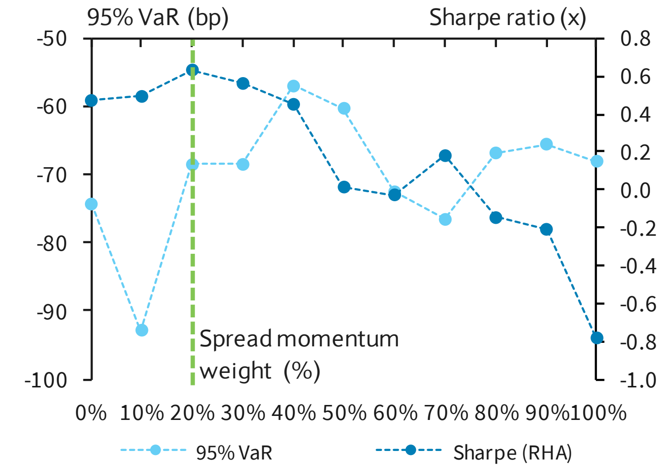
Optimizing weighting for the cheap screen: 50% spread momentum vs 50% stock price moving averages



Note: 95% VaR monthly shown, loss in bp. Sharpe ratio, measured every four weeks, quoted on an annualised basis. Source: Barclays Research

FIGURE 9

Optimizing weighting for the rich screen: 20% spread momentum vs 80% stock price moving averages



Note: 95% VaR monthly shown, loss in bp. Sharpe ratio, measured every four weeks, quoted on an annualised basis. Source: Barclays Research

At a general level, we search for the optimal pair of indicators for rich and cheap screens (separately) by calculating historical return metrics for combinations of credit and equity metrics using different weighting schemes. Based on a trade-off between the Sharpe ratio, VaR, and the actual amount of P&L generated, we present the optimal indicators for screening for rich and cheap candidates below.

Focussing on the optimized cheap names first, the optimal set of indicators is a 50-50 mix of the “spread momentum” and “stock price moving averages” indicators. Effectively, this combination picks names where the current spread level is meaningfully above the average spread level when normalizing for realised volatility – ie, names that are wider than their average – that at the same time have seen strong momentum in their equity price. These criteria intuitively flag names that look cheap.

For identifying rich names, we have chosen a 20% and 80% mix of the “spread momentum” and “stock price moving averages” indicators, respectively. Basically, names where the current spread level is meaningfully below the average spread level when normalizing for realised volatility – names that are tighter than their average – which at the same time have seen negative momentum in their equity price. These criteria intuitively flag names that look rich.

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BRCF2242