January 2021

IHS Markit Securities Finance and Credit Benchmark Research

Key findings

Introduction

IHS Markit Securities Finance has collaborated with Credit Benchmark to create the industry's first solution for integrating counterparty credit risk into securities lending inventory and loan activity. The combined datasets between IHS Markit Securities Finance and Credit Benchmark provide unique insights into market sentiment from both securities lending market and consensus credit risk assessments from a macro to individual stock level.

In this research note, we present factor model performance results by joining the two proprietary datasets.

We find short factor from Securities Finance and Probability of Default based on credit consensus sourced from Credit Benchmark are complementary to each other in portfolio constructions whereby enhanced signals can be achieved in both US and European equity markets. The new combined dataset provides stronger alpha for cheap-to-borrow (CTB) instruments than only using securities finance data fields. We are excited about the new combined offering where the Information Ratio (IR) in US instruments for CTB instruments improved from 0.13 to 0.51 (304% improvement) and in European instruments from 0.47 to 0.58 (23% improvement)

Research Premise

Numerous studies including IHS Markit's own in-house white papers have identified unique insights that can be gleaned from the securities lending market to create equity short interest signals. In general, research has demonstrated that strategies that follow informed short sellers by shorting stocks with a high level of shorting activity and buying stocks with a low level of shorting activity, have historically outperformed. These long-short strategies offer returns with low correlation to the overall market and to more traditional value/growth/momentum strategies. Credit data, such as CDS and crowding in corporate bond borrowing, have been shown to improve equity short interest signals[1].

It is also well known that there is a strong positive correlation between short portfolio alpha and the cost of borrow among common stock selection factors. The higher the alpha from the short basket, the more costly it is to realize the return. Removing expensive to borrow names from the short basket is likely to reduce factor performance. On a recent paper done by the Wolfe Research [2], they suggest removing

[1] Equity Short Signals from the Corporate Bond & CDS Market, IHS Markit Securities Finance, May 2017

[2] New Insights in Short Interest – A Global Perspective: Introducing the Markit Securities Finance Database, Wolfe Research, Luo's QES Research, August 2017

the hard to borrow stocks from both the long and short portfolios. On the short side, this leads to a decline in alpha, whereas on the long side, since these stocks tend to underperform due to over pricing, they observed a material improvement for most common factors after this adjustment. This way the losses incurred by excluding the expensive names from short portfolio can be recouped.

In this paper, we adopt a similar strategy by excluding expensive to borrow stocks from both long and short portfolios constructed based on short interest factors. We then expand to incorporate the Probability of Default metric sourced from Credit benchmark's consensus credit risk assessments, to examine whether this unique set of credit data can enhance alpha in combination with short factors.

Key Factors

- Securities Finance Utilization (**Utilization)**: The value of security borrowed from the lenders relative to the lendable inventory held in the security. We rank this factor in ascending order as stocks with low Utilization are expected to have a positive sentiment and stocks with high utilization are expected to have a negative sentiment. We use Utilization as the short factor in the US.

- Securities Finance Demand Supply Ratio (**DSR**): The value of securities borrowed relative to the lendable inventory in the security. We use our proprietary Short Loan Value which strips out non-sentiment related securities lending transactions, to provide a cleaner proxy for short interest in Europe. We rank this factor in ascending order as stocks with low DSR are expected to have a positive sentiment and stocks with high DSR are expected to have positive sentiment.

- Credit Benchmark Credit Consensus Rating Probability of Default 100 Notch score (**Prob Def**): Consensus rating as a 100-point scale mapped to its equivalent midpoint probability of default. We rank this factor in ascending order as issuers with a lower Prob Def are expected to have a positive sentiment and issuers with a high Prob Def are expected to have a negative sentiment.

Universe and Time Period

We perform back-tests on **USA Total Cap** and **Developed Europe Standard Cap** universes, which contain 3300 and 1350 stocks on average respectively. We source the universes from IHS Markit Research Signals. The back-test timeframe is from **July 2015 to December 2020**, which covers monthly timestamps.

Methodology

To construct the trading strategies, we first create two equally weighted portfolios by selecting the top and bottom 10% of securities from our US Total Cap universe and top and bottom 20% from our European universe ranked by our factors in ascending order. We then build multi factor portfolios using the combination of Securities Finance short factor and Prob Def based on Credit Benchmark consensus credit ratings.

Effectively we group securities into fractiles, with the highest fractile comprising of securities with positive sentiment, and the lowest fractile comprising of securities with negative sentiment. We then examine the return spread between the two fractile groups to judge the individual factor combinations.

We calculate 1 month forward total returns in USD to judge factor performance[3]. We follow a monthly rebalance schedule and total returns are equally weighted. Return outliers are removed from the sample.

A two-business day lag is taken when using Utilization/DSR and a 1-month lag is taken when using Prob Def to avoid the look-ahead bias in the two datasets. For instance, for end of month portfolio construction on 30th June 2015, we take a two-business day lagged value for Utilization/DSR and the Prob Def from 31st May 2015 to account for the reporting lag in the two datasets.

US Total Caps

We test the factors individually and on different combinations with other factors[4]. The highlights are:

- Both Utilization and Prob Def are negatively related to 1-month forward total returns i.e., stocks with high Utilization or high Prob Def are associated with negative sentiment and tend to underperform the following month.
- Utilization is found to be a stronger predictor of future negative returns with an average IC of -0.039 in comparison to an average IC of -0.023 for Prob Def during the time period Jul 2015 – Dec 2020.
- It is worth highlighting the decline in the average IC for both the factors after the market rally that started from April 2020 onwards as the signal reversed for both the factors. Prior to that, average IC for Utilization was close to -0.05 and for Prob Def, the average IC was -0.045.
- Filtering the universe to Cheap-to-Borrow (CTB) stocks reduces the average IC for Utilization from -0.039 to -0.019. However, filtering for high Prob Def on CTB stocks allows the Utilization signal to offset some of the signal degradation from excluding high fee stocks as the average IC improves from -0.019 to -0.025.
- A strategy that buys stocks with low Utilization and sells stocks with high Utilization offers an annualized return of 13.9% with an IR of 0.97 and a strategy that buys stocks with low Prob Def and sells stocks with high Prob Def offers an annualized return of 2.8% with an IR of 0.14 during the time period Jul 2015 – Dec 2020.
- Prior to April 2020, using Utilization offered an IR of 1.94 and Prob Def offered an IR of 0.87. Strategy returns declined during the market rally as stocks with high Prob Def and high Utilization significantly outperformed stocks with low Utilization/Prob Def.
- Utilization and Prob Def factors offer diverse returns across years with Utilization performing better than Prob Def in some years and the latter performing better in other years highlighting benefits of using the two factors in conjunction with each other.

3 Stock return data is sourced from Factset

4 The full set of results are available on request.

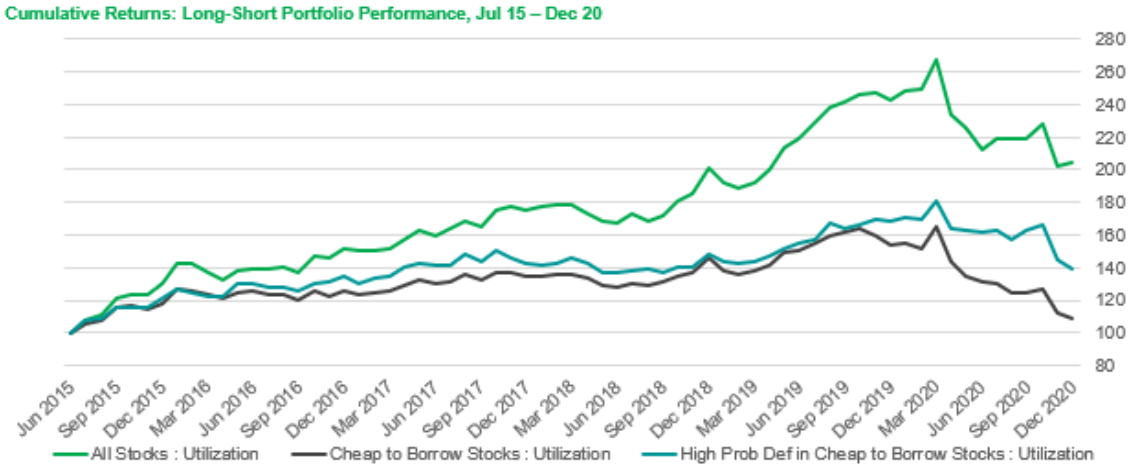
- Long-Short portfolios created using Utilization and Prob Def perform positively in Down Market periods and underperform in Up Market periods. However, Utilization performs better in Up Markets in comparison to Prob Def whereas Prob Def performs better than Utilization in Down Markets.

The following chart and table focus on the three trading strategies below:

- **All Stocks:** Utilization: All the stocks in the universe where Utilization is available.
- **Cheap to Borrow Stocks:** Utilization: The universe is filtered to cheap-to-borrow stocks i.e. DCBS = 1 where DCBS is Securities Finance cost of borrowing score, where a score of 1 means cheap to borrow (CTB) stocks. Then we use Utilization as the ranking factor.
- **Stocks with High Prob Def in Cheap to Borrow Stocks: Utilization:** The universe is filtered to cheap-to-borrow stocks first and then stocks with Prob Def greater than median Prob Def are selected. Then we use Utilization as the ranking factor.

Filtering the universe to Cheap-to-Borrow (CTB) stocks reduces the information content of the Utilization factor as the strategy benefits in terms of the Information Ratio drops from 0.97 to 0.13. However, further filtering for high Prob Def on CTB stocks allows for an improvement in IR from 0.13 to 0.51 for the Utilization factor. Prior to April 2020, filtering for high Prob Def on CTB stocks allowed the Utilization signal to improve from 1.08 to 1.34 in terms of IR

Utilization Signal: Filtering for High Prob Def on CTB Stocks



Universe	Factor	Security Count with Factor Values	Number of stocks in each portfolio	Annual Returns	Annual Volatility	Information Ratio (Jul 15 - Dec 20)	Annual Turnover Long Short Portfolio	Contribution from Short Portfolio	% Stocks in Short Portfolio with DCBS > 1	Information Ratio (Jul 15 - Mar 20)
All Stocks	Utilization	3,228	323	13.9%	14.3%	0.97	3.2	89.8%	74%	1.94
Cheap to Borrow Stocks	Utilization	2,771	277	1.7%	13.0%	0.13	3.6	92.2%	-	1.08
Stocks with High Prob Def in Cheap to Borrow Stocks	Utilization	527	53	6.2%	12.1%	0.51	3.9	77.4%	-	1.34

Developed Europe Standard Caps

We perform a similar back-test for European equities. As mentioned before, we use DSR instead of Utilization to remove non-sentiment related securities lending transactions which are more prevalent in Europe. The key findings are:

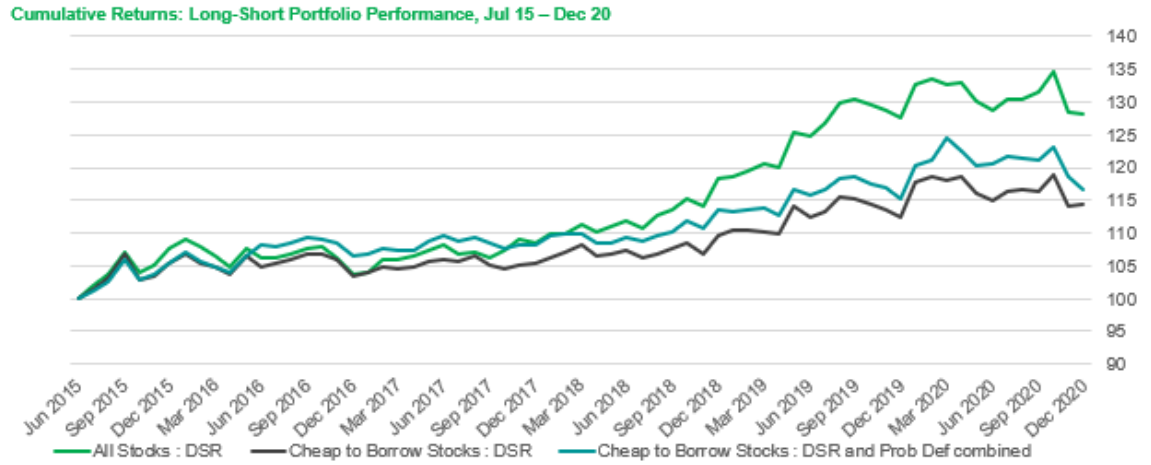
- Both DSR and Prob Def are negatively related to 1-month forward total returns i.e., stocks with high DSR or high Prob Def tend to underperform the following month in comparison to stocks with low DSR or low Prob Def.
- Combining the two factors in portfolio construction provides a better signal than using DSR or Prob Def independently. The combined signal has a higher Avg IC/Stdev IC ratio (0.32) as compared to Prob Def (0.18) and DSR (0.28) during the time period Jul 2015 – Dec 2020.
- It is worth highlighting the decline in the average IC for both the factors and for the combined factor after the market rally that started from April 2020 onwards as the signal reversed for both the factors.
- A strategy that buys stocks with low DSR and sells stocks with high DSR offers an annualized return of 4.6% with an IR of 0.83 and a strategy that buys stocks with low Prob Def and sells stocks with high Prob Def offers an annualized return of 5.1% with an IR of 0.55 during the time period Jul 2015 – Dec 2020.
- Prior to April 2020, using DSR offered an IR of 1.16 and Prob Def offered an IR of 0.98. The combined signal offered an IR of 1.36 as combining the two factors allowed for better stock selection in portfolio construction in comparison to using them on their own.
- Using a combination of the two factors on CTB stocks gives a more consistent performance over the years as compared to the individual factor performance.
- Long-Short portfolios created using DSR and Prob Def perform positively in Down Market periods and underperform in Up Market periods in general. However, DSR performs better in Up Markets in comparison to Prob Def whereas Prob Def performs better than DSR in Down Markets.

Again, we draw your attention to three trading strategies below:

- **All Stocks: DSR:** All the stocks in the universe where DSR is available.
- **Cheap to Borrow Stocks: DSR:** The universe is filtered to cheap-to-borrow stocks i.e. DCBS = 1 where a score of 1 means cheap to borrow stocks. Then we use DSR as the ranking factor.
- **DSR and Prob Def combined on Cheap to Borrow Stocks:** Percentile ranks are first calculated on CTB stocks using DSR and Prob Def separately. Then an equally weighted combined factor rank is created. When only one factor is available, that factor is given a 100% weighting.

Using a combination of DSR and Prob Def in Cheap to Borrow (CTB) stocks improves the Long-Short portfolio performance with an IR of 0.58 in comparison to using DSR (IR 0.47) and Prob Def (IR 0.30) on their own on CTB stocks. The combined signal on CTB stocks prior to April 2020 offered an IR of 1.02 in comparison to an IR of 0.7 offered by the factors independently

DSR Signal and Combination with Prob Def on CTB Stocks



Universe	Factor	Security Count with Factor Values	Number of stocks in each portfolio	Annual Returns	Annual Volatility	Information Ratio (Jul 15 - Dec 20)	Annual Turnover Long Short Portfolio	Contribution from Short Portfolio	% Stocks in Short Portfolio with DCBS > 1	Information Ratio (Jul 15 - Mar 20)
All Stocks	DSR	1286	257	4.6%	5.6%	0.83	2.7	54%	37%	1.16
Cheap to Borrow Stocks	DSR	1026	205	2.5%	5.3%	0.47	3.3	55%	-	0.70
DSR and Prob Def combined on Cheap to Borrow Stocks		1032	209	2.9%	4.9%	0.58	3.0	30%	-	1.02

Conclusions

It is well known that equities with crowded short positions underperform those with relatively little crowding. However, equities with heavy borrowing are likely to have high borrow fee, which degrades real-world returns, i.e. filtering to equities which are cheap to borrow lowers portfolio return based on short factors.

Credit data, such as CDS and crowding in corporate bond borrowing, have been shown to improve equity short interest signals. In this research note we incorporated forward-looking consensus credit risk assessments from Credit Benchmark (CB), who produces independent rankings based on surveys of credit managers.

As expected, for both US and Europe, we find stocks with relatively high CB Probability of Default metric underperform those with relatively low Probability of Default.

In US, filtering for high Probability of Default on cheap to borrow stocks allows the Utilization signal to substantially offset the degradation from excluding expensive equities. In Europe, a combined factor using DSR and Probability of Default on cheap to borrow equities gives a better signal than using DSR or Probability of Default on Low Fee equities independently.

We also find short factors perform better in up markets in comparison whereas Probability of Default performs better than Utilization in down markets. Probability of Default offers a lower turnover strategy, but short factor has a higher coverage on stocks.

IHS Markit Securities Finance delivers comprehensive data on global equity and fixed income lending flow to support investment, asset allocation and risk management decisions. With more than $30 trillion of global securities in the lending programmes of over 20,000 institutional funds, our securities finance dataset provides insight into stock supply and demand as well as availability. Along with 3 million intraday transactions dating back more than 15 years, we deliver access to crucial market signals to help refine investment decisions and manage trading risks. Data is sourced directly from leading industry participants, such as prime brokers, custodians, asset managers and hedge funds.

Credit Benchmark is the world's only source of forward-looking consensus credit risk assessments on a global range of corporations, financial institutions, sovereigns and other funds. Credit Benchmark collect over 750,000 internal credit views from more than 40 financial institutions/30,000 credit analysts, providing a new unique measure of risk. Monthly entity-level consensus credit ratings (CBRs) are provided on over 46,000 corporates, financials, funds and sovereigns and over 700 aggregates. Over 75% of the entities with CBRs are unrated by the large credit rating agencies. CBRs are less volatile than market-derived signals and reflect real-world creditworthiness. Range, skew, dispersion, trend and opinion change metrics are provided for additional insight.

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