S&P Global
Market Intelligence

Securities Finance Research and Analytics

Research Papers Summary

This document provides an overview of some of the research studies that have been conducted on the Securities Finance dataset over the years.

Last Updated: 25 October 2023

Contents

Bond-Linked Equity factors enhance signal in Equity Short Interest (Live Since September 2023, Historical Data from Apr 2015 – Jul 2023)

What it is: In this research study, we propose using our proprietary Securities Finance (short interest) data in conjunction with our Alpha Signals Bond-linked Equity Factors, to realize a stronger signal in large-cap US and Developed European equities. The research leverages the top performing Active Utilization and Bond Value Divergence factors, on which we ran historical simulations that imitate a long-short strategy, based on a monthly rebalance schedule during the period April 2015 – July 2023.

What it shows: This study portrays the benefit of using Active Utilization and Bond Value Divergence together for portfolio construction due to the uniqueness in their factor signal as they were found to be uncorrelated across the two universes during the period of our study.

- Both the factors were negatively associated with forward returns as per intuition. Stocks with low factor values outperformed stocks with high factor values and generated significant risk-adjusted returns across the two universes.
- Bond Value Divergence was found to be more profitable in selecting favorable stocks (the long portfolio), whereas Active Utilization outperformed Bond Value Divergence in selecting the short portfolio, in terms of Information Ratios (IR).
- In Developed Europe Large Caps, the Composite Factor returned an annualized spread of ~5.4% with an IR of 1.2x which exceeded Active Utilization by ~37% and Bond Value Divergence by ~31%.
- In US Large Caps, the Composite Factor returned an annualized spread of ~8.2% with an IR of 0.9x which exceeded Active Utilization by ~28% and Bond Value Divergence by ~11%.
- During years when Active Utilization generated a negative monthly spread, employing Bond Value Divergence offered positive risk-adjusted returns across the two universes. Similarly, during years when Bond Value Divergence underperformed, employing Active Utilization was found to be beneficial.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance, Alpha Signals and ClariFI)

ACCESS FULL REPORT HERE: Bond-Linked Equity factors enhance signal in Equity Short Interest

Negative Sentiment Factor Performance Update: (Live Since August 2023, Historical Data from Jan 2008 – Jun 2023)

What it is: In this research study we analyze the recent performance of the Negative Sentiment factor – which is an equally weighted combination of our three proprietary factors – Active Utilization, Lending Supply and DIMV factors and demonstrate the benefits of using it in portfolio construction across Developed Pacific, Developed Europe & US Total Caps.

What it shows: Similar to our previous studies conducted using the Negative Sentiment factor, using a combination of short sentiment factors was found to be more robust than using the factors in isolation.

- The findings from our research have implications for hedge funds and long-only fund managers as stocks with low Negative Sentiment outperformed and stocks with high Negative Sentiment underperformed relative to the universe yielding significant risk-adjusted returns with Information Ratio's >=~1.0x.
- Likewise, for a long-short strategy, the Negative Sentiment factor was found to be significant and offered Information Ratio's exceeding 1.2x across regions.
- Historical portfolio simulations revealed a strong negative relationship between the Negative Sentiment factor and future returns over the period of our study, although we have found the signal efficacy in the past 2.5 years to be stronger across regions in comparison to Jan 2008 – Dec 2020, with ~150% performance improvement in the US followed by an enhancement of 80% and 30% in APAC and Europe, respectively.
- Signal from the Negative Sentiment factor was observed to be counter-intuitive during periods of upward market rallies such as the one's observed during Mar-May 2009 post the credit crunch of 2008 and more recently in Q2 2020 when the markets rallied post the Covid-19 crash.
- The factor was found to be profitable in both down and up market periods. However, the performance of the individual low & high Negative Sentiment buckets relative to the universe and the monthly spread between the two was found to be stronger in down market periods across regions implying the signal from the dataset works better in risk-off periods.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance, Alpha Signals and ClariFI)

ACCESS FULL REPORT HERE: Negative Sentiment Factor Performance Update

Benefits of using Securities Lending data in comparison to Public Short Interest – Evidence from Hong Kong listed equities: (Live Since June 2023, Historical Data from Apr 2017 – Apr 2023)

What it is: This research study demonstrates the benefits of using securities lending factors from Securities Finance (SF) over Public Short Interest data for portfolio construction in Hong Kong listed Equities and highlight the timing advantage that we have over the available public data.

What it shows: Our analysis revealed a high commonality between Securities Finance Short Interest & Public Short Interest (cross-sectional correlation coefficient ~0.9) as per expectation, but Securities Finance offers a significant time advantage as short interest information is available at least 3 business days in advance of the release of Public Short Interest.

- Employing the Securities Finance Intraday Short Interest data offers an additional time advantage as intraday positions are available at least 1-2 business days prior to the availability of the traditional SF Short Interest.
- Securities Finance Short Interest depicted a stronger negative relationship with 1-week forward returns in comparison to Public Short Interest during the time-period of our study (average IC of 0.02x vs. a negligible IC).
- The efficacy of the cross-sectional signal was ~2 times higher (average IC of 0.04x) for the proprietary DIMV and Utilization factors in comparison to the short interest factors suggesting the importance of having additional analytics from the Securities Finance dataset that are not available in public disclosures.
- A long-short strategy, based on weekly rebalance, that used the DIMV factor in the security selection process resulted in an annualized spread of ~16.4% and an Information Ratio of 1.5x. The DIMV factor outperformed other factors in our study based on risk-adjusted returns.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and ClariFI)

ACCESS FULL REPORT HERE: **Benefits of using Securities Lending data in comparison to Public Short Interest – Evidence from Hong Kong listed equities**

Signal enhancement from combining stock borrow and short-sell volume datasets – Evidence from Japan equities: (Live Since June 2023, Historical Data from Jan 2014 – May 2023)

What it is: In this research study we portray the benefits of using stock borrow data (SF) and short-sell volume data (TSE) in conjunction, for portfolio construction in Japan equities. This paper is an update to the research we conducted in 2021.

What it shows: The back-test simulations in our study based on a weekly rebalance strategy during the period Jan 2014 – May 2023 revealed that the datasets can be combined for a more consistent stock selection signal in comparison to using the two datasets independently.

- Cross-sectional rank correlation during the period of our study between % shares outstanding on loan (Short Interest) and short volume relative to the overall sales volume (Short Volume) was found to be low with an average of ~0.06 as per expectation.
- The average Information Coefficient (IC) with 1-week forward returns for Short Interest was found to be ~0.024 (significant at 99% confidence interval) and was close to 0 for Short Volume. This demonstrated that Short Interest in general has a strong negative relationship with 1-week forward returns i.e., higher the Short Interest, lower the forward returns.
- For a hypothetical long-short strategy, using a combination of the two factors yielded a more consistent performance over the years and in different market regimes as compared to the individual factors. Short Volume was found to perform better in Up Market periods while Short Interest performed better in Down Market periods.
- The combined factor was found to be more profitable in selecting favorable stocks (the long portfolio), whereas Short Interest outperformed the other factors in selecting the short portfolio, in terms of Information Ratios (IR).
- Notably the performance of the Short Interest factor was mainly dominated by the performance of the most shorted stocks whereas for the Short Volume factor, the performance was dominated by stocks with the least Short Volume.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and ClariFI), JPX (Tokyo Stock Exchange)

ACCESS FULL REPORT HERE: Signal enhancement from combining stock borrow and short-sell volume datasets – Evidence from Japan equities

Using Bond to Equity Short Interest to Enhance Signal in Equity Short Interest: (Live Since May 2023, Historical Data from Jan 2008 – Feb 2023)

What it is: This research study is an update to our previous paper that was conducted in 2019 where we demonstrated a similar improvement in equity long-short signal by combining equity short sentiment with bond-to-equity short sentiment. We have employed the novel bond-to-equity utilization that aggregates short interest sentiment for a public entity across its global liquid bond issues by using historical point-in-time index constituents sourced from the proprietary iBoxx indices that are part of S&P Global Dow Jones Indices.

What it shows: The observations from our study exhibit the benefits of integrating bond-to-equity short sentiment with equity short sentiment for portfolio construction in large cap equity stocks in US and Developed Europe.

- Our historical simulations based on a monthly rebalance long-short portfolio strategy during the period Jan 2008 – Feb 2023 revealed that both bond-to-equity utilization and equity utilization are predictive of future equity returns with the latter providing a stronger signal in general.
- Additionally, we found the combination of the two factors to be superior, generating a higher risk-adjusted return, in comparison to using the factors independently for portfolio construction in US and European equities.
- For European equities, we created a custom combination where the long leg was based on bond-to-equity utilization and the short leg was based on the composite factor. The customized strategy returned an annualized spread of ~7.4% with an Information Ratio (IR) of 0.9x which was 39% higher in comparison to an IR of 0.6x using just the equity utilization factor.
- Our results for US equities cross-validated our hypothesis of using both equity and bond short sentiment datasets in conjunction for better portfolio performance. A custom strategy where the long leg was based on the composite factor and the short leg was based on equity utilization yielded an annualized spread of ~9.6% with an IR of 0.8x (10% higher than using equity utilization independently).

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance, Alpha Signals and ClariFI), S&P Global Dow Jones Indices

ACCESS FULL REPORT HERE: **Using Bond to Equity Short Interest to Enhance Signal in Equity Short Interest**

Intraday Trade Flow - Additional Source of Alpha for European Equities: (Live Since April 2023, Historical Data from Feb 2019 – Jan 2023)

What it is: This research study analyzes whether the Securities Finance Intraday dataset can be utilized to offer enhanced benefits for portfolio construction in European equities in addition to the traditional Securities Finance dataset. Similar to the research undertaken on US Equities in January 2023, we create different variations of the Demand Supply Ratio (DSR) factor using a combination of the daily aggregated End-of-Day settlement date files and the Intraday trade date files and compare their back-test performance on a universe of liquid European equity stocks.

What it shows: Our historical portfolio simulations on European equities based on a daily rebalance strategy (Open to Close) during the period 7th Feb 2019 – 10th Jan 2023, suggests that fund managers can utilize the Intraday dataset as a new source of alpha.

- Stocks classified as unfavorable i.e., negative sentiment stocks with high values of the $DSR_{Intraday\ flow}$, DSR_{EOD} and $DSR_{EOD+Intraday}$ factors, underperformed the European equity universe during the time-period of our analysis as per intuition.
- We find that updated levels of aggregated borrowing (short interest levels) for stocks with high short interest using a combination of the End-of-Day and the Intraday files offers a marginal improvement in the risk-adjusted returns when compared to the short interest levels based solely on the End-of-Day files.
- Furthermore, the information contained in Intraday borrow flow can be used by fund managers for new alpha generation which may not be available to users solely reliant on the traditional Securities Finance dataset.

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The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and ClariFI)

ACCESS FULL REPORT HERE: Intraday Trade Flow - Additional source of Alpha for European Equities

Intraday Trade Flow - Additional Source of Alpha: (Live Since January 2023, Historical Data from Jan 2019 – Aug 2022)

What it is: In this research study, we analyze whether the Securities Finance Intraday dataset can be utilized to offer enhanced benefits for portfolio construction in US equities in addition to the traditional Securities Finance dataset. For our analysis we create different variations of the popular Demand Supply Ratio (DSR) factor using a combination of the daily aggregated settlement date files and the Intraday trade date files and compare their back-test performance on a universe of liquid US equity stocks.

What it shows: Our research findings highlight that updated levels of aggregated borrowing (short interest levels) using a combination of the Early file (Midday publish) and Intraday files do not change significantly when compared to just using the Early file (Midday publish). However, new information contained in Intraday borrow flow can still be used by long-only and long-short managers for enhanced signal.

- Historical portfolio simulations on US equities based on a daily rebalance strategy (Open to Close) during the period Jan 2019 – Aug 2022, revealed that fund managers can utilize the Intraday dataset as an additional source of alpha.
- Stocks with the highest Intraday borrow flow significantly underperformed the stocks with the lowest Intraday borrow flow.
- A long-short strategy that would have bought stocks with the least Intraday borrow flow and sold stocks with the highest Intraday borrow flow would have yielded an IR of ~2.4x during the period of our study.
- Splitting the universe into US large caps and US small caps we find considerable benefits in using the $DSR_{Intraday\ flow}$ factor for portfolio construction. This further strengthens the use case for using the Intraday dataset as an additional source of alpha.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and ClariFI)

ACCESS FULL REPORT HERE: Intraday Trade Flow - Additional Source of Alpha

Securities Finance Factor Insights from South Korea: (Live Since December 2022, Historical Data from Jan 2008 – Oct 2022)

What it is: This research study provides a brief overview of the securities lending market in South Korea along with the regulatory environment and future developments. We construct an especially tailored version of the Securities Finance Negative Sentiment factor for equity portfolio construction for the market using an equally weighted combination of the Lendable Supply, Lendable Stability, Demand Supply Ratio, Days to Cover and DIMV factors. We also highlight the benefits of using the Securities Finance factors over the publicly available short interest data in South Korea and demonstrate the benefit of using the short sentiment factors as an overlay to a deep value strategy.

What it shows: We demonstrate that combining the Securities Finance factors offered the strongest signal with the Securities Finance Negative Sentiment delivering an average IC of ~0.06 during our back-test period which was superior to the individual factors.

- Recent performance of the composite Securities Finance factor more than doubled with an average IC of 0.12 since the beginning of 2021 in comparison to an average IC of 0.05 observed between 2008-2020.
- A hypothetical long-short strategy that bought the top 30% ranked stocks and sold the bottom 30% ranked stocks at the end of every month, based on the Securities Finance Negative Sentiment factor, would have returned an annualized spread of 8.36% and an Information Ratio of 0.66 for South Korean equities during the time-period of the study.
- Lendable Supply, Demand-Supply based factors like Utilization and Demand Supply Ratio along with exclusive factors like DIMV and Lendable Stability were found to be ~2 times more effective than the Public Short Interest and the Shares on Loan factors suggesting the importance of the unique securities lending data and insights offered from the Securities Finance dataset for portfolio construction.
- Adding the Securities Finance Negative Sentiment factor to a Deep Value strategy improved the signal efficacy by ~20% suggesting the importance of using the Securities Finance as an alternative dataset to enhance portfolio performance for Korean equities.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance, Alpha Signals and ClariFI)

ACCESS FULL REPORT HERE: **Securities Finance Factor Insights from South Korea**

Using Short Sentiment data for Fixed Income Portfolio Construction: (Live Since October 2022, Historical Data from Dec 2009 – Jul 2022)

What it is: In this research study, we have used measures related to borrow sentiment from Securities Finance to understand whether the information contained in this novel dataset can be used by fixed income managers in portfolio construction. The universe comprised of the iBoxx Global Developed Markets High Yield Index (a part of S&P Global Dow Jones Indices) during the time-period between Dec 2009 – Jul 2022.

What it shows: Our findings have implications for using short sentiment as an additional criterion for bond selection in fixed income portfolio construction and in creation of enhanced indices. Bonds with high Negative Sentiment can be assigned lower weights in comparison to bonds with low Negative Sentiment. Similarly, bonds with high Negative Sentiment can also be outrightly excluded from the index or portfolios to enhance performance.

- Short Interest and Borrow Cost measures were found to be negatively associated with forward bond returns and Lendable Supply had a positive association. The low to moderate correlation between the Securities Finance factors allowed us to create a short interest factor to identify bonds with the Most/Least Negative Sentiment.
- For a hypothetical strategy that would have bought bonds with the Least Negative Sentiment and sold bonds with the Most Negative Sentiment every month during the time-period Dec 2009 – Jul 2022, would have yielded ~250 bps on an annual basis with an Information Ratio (IR) of 0.36. The same strategy would have returned ~460 bps annually with an IR of 0.71 (~2x Increment) during the time-period Jan 2014 – Jul 2022.
- The Negative Sentiment factor signal was consistent across different credit ratings, duration, and yield buckets wherein bonds with Least Negative Sentiment outperformed bonds with Most Negative Sentiment. However, we found the factor signal to be stronger in bonds with lower credit ratings, lower duration, and higher yields.
- After neutralizing the Negative Sentiment factor for any bias towards credit ratings, bond yield and duration, we noticed a slight drop in the annualized spread (250 bps to 190 bps) from the strategy that bought bonds with the Least Negative Sentiment and sold bonds with the Most Negative Sentiment. But on the positive side, there was a huge drop in the volatility of returns after neutralizing the Negative Sentiment factor (7% to 4.6% Std Dev) causing a slight uptick in the risk adjusted returns (0.36 to 0.42 IR).

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, S&P Global Dow Jones Indices

ACCESS FULL REPORT HERE: Using Short Sentiment data for Fixed Income Portfolio Construction

Combining Securities Finance & Institutional Ownership factors for Portfolio Construction in US Equities: (Live Since August 2022, Historical Data from Dec 2007 – Apr 2022)

What it is: In-house research, where we combined our Securities Finance factors with the recently released proprietary point-in-time Institutional Ownership factors from our Alpha Signals factor library and found benefits in combining the two datasets for portfolio construction in US equities during the time-period between Dec 2007 – Apr 2022.

What it shows: Our historical portfolio simulations revealed that Active Utilization, DIMV and Top 5 Ownership Concentration factors had a significant negative relationship with 1- month forward returns for US equities. Lending Supply, % Institutional Holdings and % of Active Funds as measured by Liquidity Flow (Count) were found to be '+' factors during the time-period of our analysis.

- Factor rank correlations advocated that the Active Utilization and DIMV factors had a low commonality with the ownership factors in general. Interestingly, we observed a high positive correlation between Lending Supply and % of Institutional Holdings as per perception. Finally, stocks with high Lending Supply were found to have a low Ownership Concentration (widely held) as well.
- Using a combination of Active Utilization, DIMV, Lending Supply and Top 5 Ownership Concentration factors in a strategy that bought favourable stocks and sold unfavourable stocks monthly during the period Jan 2017 – May 2022 yielded an information ratio (IR) of ~1.9x that was 13% higher than using the Securities Finance factors independently, which yielded an IR of ~1.7x.
- The average monthly spreads observed in different periods during our study highlighted that using a blended factor gave a more consistent signal in comparison to using the two datasets in isolation.
- The blended factor offered significant improvement in the years 2009 and 2020 when the factor efficacy for the Top 5 Ownership Concentration factor was stronger than the Active Utilization and DIMV factors. Factor reversal for the short sentiment factors was mainly caused by the bear market rallies observed during these years.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals), FactSet

ACCESS FULL REPORT HERE: Combining Securities Finance & Institutional Ownership factors for Portfolio Construction in US Equities

Securities Finance Intraday Research - Intraday Loans and New Loans: (Live Since July 2022, Historical Data from Jan 2021 – Jun 2022)

What it is: A short research study that shows that significant increases in Intraday loans are 95% accurate in predicting a significant increase in EOD settled New Loan activity. The universe comprised of US Equities during the time-period between Jan 2021 – Jun 2022.

What it shows: The results suggest that Intraday activity is a good estimate for identifying stocks which eventually observe a significant borrowing flow and rise in loan balances in advance.

- We also found that significant increases in Intraday Loans convert to significant increases in EOD settled Quantity on Loan in ~67% of the cases observed during the time-period of our study.
- To conduct our analysis, we used the last publish of the Securities Finance hourly intraday files to fetch Intraday Loans, New Loans (EOD settlement data) were downloaded from the Securities Finance API and EOD Quantity on Loan was taken from the Securities Finance Buyside Analytics data feed.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance

ACCESS FULL REPORT HERE: **Securities Finance Intraday Research - Intraday Loans and New Loans**

Predicting Significant changes in End of Day Quantity on Loan using Intraday Quantity on Loan – European Equities: (Live Since June 2022, Historical Data from Jan 2021 – Dec 2021)

What it is: This research paper has summarized the relevance of our Intraday dataset in predicting significant movements in our End of Day dataset for European Equities during the time-period between Jan 2021 – Dec 2021.

What it shows: Our historical analysis revealed that around 60% of the traded value settle on a ('t+1') basis for European equities. As such, for European equities, most of the trades that appear in the Intraday dataset for trade date ('t') will be reflected in the Securities Finance End of Day Settlement dataset on ('t+1').

- The last hour file from the Intraday dataset for trade date ('t') is available at least 52 hours before the publish of the EOD Settlement for ('t+1').
- If there was a significant increase (>=10%) in Intraday Loans for 't' (relative to the End of Day settlement data for 't'), we observed a significant increase (>=10%) in the End of Day Settlement data for 't+1' in 52% of the cases.
- If there was a significant decrease (<= -5%) in Intraday Loans for 't' (relative to the End of Day settlement data for 't'), we observed a significant decrease (<= -5%) in the End of Day Settlement data for 't+1' in 62% of the cases.
- The results were found to be consistent during the time-period of our analysis.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance

ACCESS FULL REPORT HERE: **Predicting Significant changes in End of Day Quantity on Loan using Intraday Quantity on Loan – European Equities**

Predicting Significant Increases in End of Day Quantity on Loan using Intraday Quantity on Loan – US Equities: (Live Since March 2022,Historical Data from Jan 2021 – Dec 2021)

What it is: First study, in a series of research papers on our Intraday dataset to predict significant increases in the Securities Finance End of Day (EOD) dataset for US equities under the premise that any significant changes in the former will be observed in the latter comprising of daily files between Jan 2021 – Dec 2021.

What it shows: Our findings explore the time-advantage through the availability of the last hour file from the Intraday dataset which is at least 28 hours before the publish of the EOD files. This allows for capturing significant increases in quantity on loan at least one day in advance.

- The last file for Intraday QOL for day 't' is available at around 11:00 pm UTC on day 't'.
- End of day QOL for day 't-1' is available at around 3:30 am UTC on day 't+1'. Predicted Change in End of Day QOL for US Equities can be calculated at 3.30 am UTC on day 't+1'.
- End of day QOL for day 't' is available at around 3:30 am UTC on day 't+2'. Actual Change in End of Day QOL will be available at 3:30 am UTC on day 't+2'.
- Probability of predicting a significant increase in End of Day Quantity on Loan numbers goes up from 19% to 69% by having access to significant increases in the Intraday dataset for US Equities. This prediction accuracy is consistent during the one-year daily time-period in 2021.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance

ACCESS FULL REPORT HERE: **Predicting Significant Increases in End of Day Quantity on Loan using Intraday Quantity on Loan – US Equities**

Negative Sentiment Factor Performance across Market and Volatility regimes: (Live Since February 2022, Historical Data from Jan 2008 – Dec 2021)

What it is: In this research paper, we showcase the performance of the SF Negative Sentiment factor (combination of Lending Supply, Active Utilization and DIMV) across different market/volatility regimes across regions during the time-period between Jan 2008 and Dec 2021.

What it shows: Our results were in line with the intuition that stocks with high Negative Sentiment underperform stocks with low Negative Sentiment in general. The SF Negative Sentiment factor was found to be significant even after controlling for different biases towards Market Cap and Industry Sectors highlighting the robustness in the factor signal.

- Removing expensive to borrow stocks reduced the information content of the factor signal but average rank cross sectional information coefficients (ICs) remained statistically significant. Filtering out expensive to borrow names had an added advantage of showcasing realistic factor performance.
- The year 2021 was one of the best performing years over the 14-year period in terms of SF Negative Sentiment factor performance with average rank ICs exceeding 0.06x across regions.
- Using the SF Negative Sentiment factor in portfolio construction was found to be profitable in both down and up market periods. However, the relative performance of low/high Negative Sentiment buckets in comparison to the universe was found to be much stronger in down market periods highlighting the signal from the dataset works better in risk-off periods in comparison to risk-on periods.
- In Developed Europe and Developed Pacific, the factor signal performed as per intuition whether universe returns were abnormally positive or negative in a particular month suggesting the reliability of the SF factor signal in periods of market stress and market reversals.
- In US, we noted a reversal in factor signal when the universe returns were abnormally positive where stocks with high Negative Sentiment outperformed stocks with low Negative Sentiment and the overall universe against intuition.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals), FactSet

ACCESS FULL REPORT HERE: **Negative Sentiment Factor Performance across Market and Volatility Regimes**

Securities Finance Negative Sentiment and Traditional Quant Factors: (Live Since October 2021, Historical Data from Jan 2008 – Aug 2021)

What it is: This research paper, provided an insight into the performance of the Securities Finance Combined Negative Sentiment Factor across regions and how the factor can be used as an overlay (double sort) to enhance traditional factor performance. The Negative Sentiment factor is created by using a combination of three proprietary Securities Finance data elements – Active Utilization, DIMV & Lending Supply.

What it shows: Our research findings were in line with the intuition that stocks with a high Negative Sentiment score underperform stocks with a low Negative Sentiment score on a relative basis besides highlighting a strong negative relationship for the Negative Sentiment factor with 1-month forward total returns.

- A long-short strategy that buys stocks with low Negative Sentiment and sells stocks with high Negative Sentiment based on a monthly rebalance yielded strong risk-adjusted returns with an IR >= 1.5x across US Small Caps, Developed Europe, and Developed Pacific Universes. For US Large Caps, the strategy delivered an IR of 0.5x.
- Return enhancement using the Negative Sentiment overlay was found to be superior for stocks with unfavourable characteristics i.e., stocks with lower Market Cap, lower Price Momentum, higher Beta, higher Return Volatility, and stocks with lower Historical Growth. Stocks with High Negative Sentiment offered underperformance enhancement and stocks with Low Negative Sentiment offered outperformance enhancement within each quant factor bucket.
- Our analysis demonstrated implications for both long-only and long-short portfolio managers who can utilize the Negative Sentiment factor for enhancing their portfolio returns.
- Controlling for any bias towards the individual quant factors did not have any significant impact on the efficacy of the cross-sectional signal of the Negative Sentiment factor as average rank ICs remained statistically significant at 99%

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals), FactSet

ACCESS FULL REPORT HERE: **Securities Finance Negative Sentiment and Traditional Quant Factors, Summary**

Factor Performance Down Under: (Live Since August 2021, Historical Data from Jan 2008 – Jun 2021)

What it is: In this research study we analyzed the performance of our key factors for portfolio construction in Australia based on a monthly rebalance strategy during the time-period between Jan 2008 – Jun 2021.

What it shows: Our research suggested that proprietary Demand-Supply based metrics along with the DIMV indicator illustrated strong negative relationship with 1-month forward returns where stocks with a high DIMV score or Utilization underperformed stocks with a low DIMV score or Utilization.

- Efficacy of the cross-sectional signal was found to be lower in comparison for DIPS and pure Demand based factors like Short % and Short Loan % but the average ICs reported were still significant at 95% confidence level. Lending Supply, the stability factors, and Days to Cover did not have any material relationship with 1-month forward returns.
- Drilling down on the DIMV factor revealed a consistent negative relationship with forward returns (+average IC) over the years except for 2016 and 2020 where the factor signal performed against intuition as stocks with low DIMV underperformed stocks with high DIMV. However, the strategy signal for the DIMV factor was back on track in the first 6 months of 2021 with an average IC of 0.06.
- For a long-short strategy using the DIMV factor, the average monthly spread between the buy (or overweight) stocks and the sell (or underweight) stocks was 0.5% with positive results in almost 63% of the months. On an annual basis, the strategy returned 5.91% that equated to an IR of 0.76.
- Neutralizing the bias in the DIMV factor towards the traditional quant factors had the effect of reducing the long-short spread (0.5% to 0.24% per month) and the cross-sectional signal (0.03 to 0.017 IC) by almost 50%. Nonetheless, the cross-sectional signal remained statistically significant at 95% highlighting the robustness of the DIMV factor in picking the best and the worst performing stocks even after neutralizing exposure to traditional quant factors.
- We highlight the benefits of using DIMV as an overlay (double sort) to enhance the long- short signal performance of traditional quant strategies. For e.g., the monthly spread of 0.35% between high Momentum stocks and low Momentum stocks can be significantly enhanced to 0.70% per month by buying (or overweighting) stocks with low DIMV within the high Momentum stocks and selling (or underweighting) stocks with high DIMV within the low Momentum stocks. We observed a similar enhanced performance pattern for the other quant factors in our study.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals), FactSet

ACCESS FULL REPORT HERE: Factor Performance Down Under

Research Findings on ESMA Public Disclosures and the Securities Finance factors: (Live Since August 2021, Historical Data from Mar 2013 – Jun 2021)

What it is: Analysis of stocks with open short positions disclosed as per the ESMA guidelines alongside some of the Securities Finance factors for portfolio construction based on a weekly rebalance strategy. The equity universe was comprised of around 570 stocks on average during our back test period with disclosed open short position.

What it shows: Our research suggested that short sentiment related factors (Short Disclosure, Short Loan, Utilization) were negatively related with 1-week forward returns where stocks with high short interest underperformed stocks with low short interest. Stocks with high Lending Supply outperformed stocks with low Lending Supply.

- Lending Supply and Utilization were found to have the strongest relationship with 1-week forward returns with an average rank IC of 0.028 and 0.024, respectively. Short Disclosure and Short Loan worked as per intuition, but the efficacy of the signal (average rank IC of 0.01) was lower in comparison.
- Short Disclosure had a high positive correlation with the Securities Finance Short Loan. Similarly, a high positive correlation was observed between Short Loan and Utilization. The Lending Supply factor was negatively correlated to Utilization.
- Based on a weekly rebalance strategy during the time-period Mar 2013 – Jun 2021, buying the top 40% ranked stocks and selling the bottom 40% ranked stocks would have been the most profitable for the Lending Supply factor with an annualized spread of 3.44% and an information ratio of 0.52. Utilization followed closely with an information ratio of 0.43. The annualized spread between the top and the worst ranked stocks was close to 2% for the Short Loan and Short Disclosure factors but the Short Disclosure factor offered lower volatility of returns in comparison to the Short Loan factor thereby offering a better risk- adjusted factor performance.
- Lending Supply saw a reversal in performance in 2017 and 2020 when all the short sentiment factors observed a positive weekly spread. In 2021 (Jan – Jun 2021), the short sentiment factors saw a reversal in performance with the most shorted stocks outperforming the least shorted stocks, whereas we observed the Lending Supply factor performing as per intuition.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, FactSet

ACCESS FULL REPORT HERE: **Research Findings on ESMA Public Disclosures and the Securities Finance factors**

Research Findings in iBoxx $ Corporates: (Live Since May 2021,Historical Data from Dec 2009 – Mar 2021)

What it is: Uses Securities Finance and iBoxx dataset to create a Positive Sentiment indicator to identify bonds with the most/least positive sentiment in the iBoxx $ Corporates index (a part of S&P Global Dow Jones Indices).

What it shows: Our findings suggested using Securities Finance data as an additional criterion for bond index construction whereby bonds with the lowest positive sentiment could be assigned lower weights in the index or are excluded. Similarly, bonds with the highest positive sentiment could be assigned higher weights in the index.

- It was found that the bonds with the most positive sentiment outperformed the index by 1.5% annually and bonds with the least positive sentiment underperformed the index by 1.2 % annually. Our results hold true even after adjusting the biases for credit ratings, bond duration and yield in our portfolios.
- Our results were in line with intuition as we found that bonds with high lendable supply or bonds with low borrow costs outperformed bonds with low lendable supply or bonds with high borrow costs. Bonds with high loan value performed against intuition as they outperformed bonds with low loan value during our back test period as high borrow activity might be an indication of liquidity rather than negative sentiment for our Investment Grade universe.
- The positive sentiment factor was also found to be beneficial in portfolio construction. A strategy that bought bonds with the most positive sentiment in the index and sold bonds with the least positive sentiment in the index every month on the rebalance date offered an annualized spread of around 2.6% with an IR of 0.70.
- When the index returns were up in a particular month, the factor performed as per intuition with most positive sentiment bonds outperforming the index and the least positive sentiment bonds underperforming the index. We observed a reversal in the factor performance when the index returns were down.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, S&P Global Dow Jones Indices

ACCESS FULL REPORT HERE: Research Findings in iBoxx $ Corporates

TSE & Securities Finance: (Live Since March 2021, Historical Data from Jan 2014 – Feb 2021)

What it is: Analysis of the short interest data reported to Securities Finance along with daily sell and buy trade volume data from Japanese Stock Exchange to examine the performance of the aforementioned two factors and then subsequently creates a combined factor to analyze the benefits in portfolio construction. The equity universe was comprised of around 1450 Japanese stocks which cover approximately 95% of the cumulative market capitalization in Japan.

What it shows: Our research suggested that when Short Interest and Short Volume factors were used together, it enhances stock selection for Japan equities and the combination of the two factors has benefits in long-short portfolio construction during the time-period of our analysis.

- The average Information Coefficient (IC) with 1-week forward returns for Short Interest was found to be -0.022 (significant at 99% confidence interval) and was close to 0 for Short Volume. This highlights that Short Interest in general was negatively related to 1- week forward returns i.e., higher the Short Interest, lower the forward returns.
- The cross-sectional rank correlation over time between % shares outstanding on loan (Short Interest) and short volume relative to the overall sales volume (Short Volume) was found to be low with an average of 0.02.
- For a Long-Short strategy formed using the Bottom/Top 20% of the factor values, we found that Short Interest offers a better risk-adjusted return (IR) than Short Volume (1.03 vs. 0.87). However, a combination of the two factors enhances the security selection further with an improved IR of 1.98 as compared to using them independently.
- For a short-only strategy, the basket of securities with the highest Short Interest (Top 20%) underperformed more relative to the universe as compared to the basket of securities with the highest Short Volume (Top 20%) and the basket of securities with the highest combined factor.
- For a long-only strategy, the basket of securities with the lowest Short Volume (Bottom 20%) outperforms more relative to the universe in comparison to the basket of securities with the lowest Short Interest. However, using a combination of the two factors provided the best risk-adjusted return with an IR of close to 3.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, JPX (Tokyo Stock Exchange), FactSet

ACCESS FULL REPORT HERE: TSE and Securities Finance

Factors Performance Update: Research Findings Across Regions: (Live Since March 2021, Historical Data from Jan 2008 – Dec 2020)

What it is: Utilizes Securities Finance dataset to combine best performing individual factors in order to create a robust sentiment indicator where stocks with high Short Sentiment factor values can be given an unfavourable rank (Sell/Underweight) and stocks with low Short Sentiment factor values can be given a favourable rank (Buy/Overweight). The research focuses primarily on Developed Asia Pacific, Developed Europe, US Large Cap and US Small Cap universe.

What it shows: Our results were in line with the intuition that stocks with relatively high short interest were associated with negative sentiment and stocks with relatively high lendable supply were associated with positive sentiment. These findings were consistent across regions during the time-period in our study.

- Based on a monthly factor rebalance during the period Jan 2008 – Dec 2020, the combined Short Sentiment factor outperformed the individual Securities Finance factors in all our universes in terms of the relationship with forward returns as measured by the average Information Coefficient (IC).
- The average IC was found to be significant at 99% significance level for the Short Sentiment factor across the four universes used in our study which suggests a strong relationship with forward returns where stocks with high Short Sentiment factor values underperform stocks with low Short Sentiment factor values.
- We also found the information content in the Active Utilization and the Lendable % factors to hold out over long-term holding periods which proves useful for a trading strategy that does not rebalance frequently.
- Using the Alpha Signals platform, Securities Finance factors like Active Utilization, Utilization, Demand Supply Ratio and Lendable % were found in the list of top performing factors in US Small Caps and Developed Asia Pacific universe based on average IC observed during the time-period Jan 2008 – Dec 2020 for a monthly rebalance strategy.
- For a long-short portfolio construction, the combined Short Sentiment outperformed the three individual factors with Information Ratios > 1 for the Developed Asia Pacific, Developed Europe, and US Small Cap universes. In US Large Caps, Active Utilization were found to outperform rest of the factors.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals), FactSet

ACCESS FULL REPORT HERE: Factors Performance Update: Research Findings Across Regions

Public Short Interest Comparison Study: Research Findings – US Equities: (Live Since Feb 2021, Historical Data from March 2016 – Nov 2020)

What it is: This paper compares the performance of the traditional Securities Finance factors along with the proprietary Short Interest Forecast with the public data available in the US over a 4-and-a-half-year period. This paper also highlights the importance of the daily frequency borrow data, availability of the unique Lendable Inventory contributed to Securities Finance (SF), the accuracy of the Short Interest Forecast in predicting the next public Short Interest. Finally, we highlight the importance of considering the publication lag of the Public Short Interest data as the strategy signal for Public Short Interest can appear to be artificially better when the reporting lag was not incorporated.

What it shows: Forecast Short Interest provided by SF was found to be around 90% accurate on average in forecasting the Public Short Interest number for both US Large Cap and Small Cap securities based on monthly time stamps during Mar 2016 to Nov 2020. We note that the public number was released at least 7 business days after the SF forecast was available for a given settlement date.

- Our research on short sentiment highlights relationship with forward returns was much stronger for Demand/Supply based factors like Active Utilization, Demand Supply Ratio and Lending Supply in comparison to pure Demand based factors like Public Short Interest and SF Short Interest in both US Large Cap and Small Cap equities.
- A strategy that buys stocks with low Demand Supply Ratio or low Active Utilization or high Lending Supply and sells stocks with high Demand Supply Ratio or high Active Utilization or low Lending Supply was found to be more profitable in comparison to a strategy that buys stocks with low SF Short Interest or Public Short Interest and sells stocks with high SF or Public Short Interest during the 13-year period Jan 2008 – Nov 2020.
- Our research suggests a reversal in strategy for all the short sentiment factors during market rallies like the one observed in Mar – Apr 2009 and from April 2020 onwards where stocks with high negative sentiment outperformed stocks with low negative sentiment which was against intuition. During such periods, using SF Lending supply can prove to be beneficial as the reversal in signal was less extreme for this factor in comparison to other factors.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals), FactSet

ACCESS FULL REPORT HERE: **Public Short Interest Comparison Study: Research Findings – US Equities**

Research Findings on iBoxx Global Developed Markets High Yield Index: (Live Since Jan 2021,Historical Data from Dec 2009 – Oct 2020)

What it is: Uses Securities Finance and iBoxx dataset to create a composite short interest factor to identify bonds with the most/least negative sentiment in the index. Demonstrates the analysis of iBoxx Global Developed Market high yield index (a part of S&P Global Dow Jones Indices) to test the hypothesis that bonds that were heavily shorted or bonds that were expensive to borrow or bonds with the low lendable supply were associated with negative sentiment.

What it shows: Our findings suggested that using Securities Finance data as an additional criterion for bond index construction whereby bonds with the highest negative sentiment were either assigned lower weights in the index or could be excluded from the index. Similarly, bonds with the lowest negative sentiment could be assigned higher weights.

- It was found that the bonds with the most negative sentiment underperform the index by 1.4% annually and bonds with the least negative sentiment outperform the index by 0.8% annually during the test-period. Our results hold true even after adjusting the bias for duration, credit ratings, bond yields and after adjusting the bias towards energy issuers in our portfolios.
- The risk adjusted return Information Ratio (IR) from the index after excluding the bonds with the highest negative sentiment was 0.95 in comparison to 0.75 from the overall index (an improvement of 27%).
- The short interest composite factor also showed benefits in portfolio construction. A strategy that buys bonds with the least negative sentiment in the index and sells bonds with the most negative sentiment in the index every month on the rebalance date offers an annualized spread of around 2% with an IR of 0.29 during the test period.
- Our findings in general were stronger during market downturns and stress periods in comparison to periods when the market rallies upwards. During periods of upward rally, bonds that had high negative sentiment perform better than the index and bonds with low negative sentiment underperform the index.
- Evidence suggested that bonds in our most negative sentiment bucket had a higher exposure (in terms of % weight held in the portfolio) to bonds with lower credit ratings, higher duration, and higher yields in comparison to the index.

The full explanation of the investment recipe, the specifics behind the component building blocks and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, S&P Global Dow Jones Indices

ACCESS FULL REPORT HERE: **Research Findings on iBoxx Global Developed Markets High Yield Index**

Securities Finance and Credit Benchmark Research: (Live Since Jan 2021, Historical Data from July 2015 – Dec 2020)

What it is: This research paper presents factor model performance results by joining the two proprietary datasets of Securities Finance and Credit Benchmark. The datasets were used to create a unique solution for integrating counterparty credit risk into securities lending inventory and loan activity. The primary focus was on USA Total Cap and Developed Europe Standard Cap universes.

What it shows: Our research suggested that short factor from Securities Finance and Probability of Default based on credit consensus sourced from Credit Benchmark were complementary to each other in portfolio constructions whereby enhanced signals can be achieved in both US and European equity markets.

- For USA Total Cap, filtering the universe to Cheap-to- Borrow (CTB) stocks reduced IR for Utilization from 0.97 to 0.13. However, using Utilization as a factor overlay on CTB stocks with an additional filter to include stocks with High Prob Def only, the IR recovered from 0.13 to 0.51. This strategy also offered a more balanced return by reducing contribution from the short portfolio from 90% to 77%.
    - Both Utilization and Prob Def were negatively related to 1-month forward total returns, but Utilization had a higher average IC compared to Prob Def (-0.039 vs. -0.023) for the overall universe during the test period.
    - For a Long-Short portfolio, Utilization offered a better risk-adjusted return i.e., information ratio (IR) than Prob Def (0.97 vs. 0.14) for the overall universe.
- For European equity, filtering the universe to Cheap-to- Borrow (CTB) stocks reduced IR for DSR from 0.83 to 0.47 for a long-short portfolio. The combination of DSR and Prob Def filtered on CTB stocks improved the IR from 0.47 to 0.58 (an improvement of around 23%).
    - Both DSR and Prob Def were negatively related to 1-month forward total returns but a combination of DSR and Prob Def had a higher Avg IC/Std.Dev ratio (0.32) as compared to Prob Def (0.18) and DSR (0.28) on their own during the test period.
    - For a Long-Short portfolio (Top/Bottom 20%), DSR offered a better risk-adjusted return (IR) than Prob Def (0.83 vs. 0.55) for the overall universe. For CTB stocks as well, DSR performed better with an IR of 0.47 compared to 0.30 for Prob Def.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, Credit Benchmark, FactSet

ACCESS FULL REPORT HERE: Securities Finance and Credit Benchmark Research, Research Findings in US Equities, Research Findings in European Equities

Expanding our Short Squeeze Model to global markets: (Live Since April 2020, Historical Data from Jan 2011)

What it is: It is a multifactor model designed to predict short squeeze events which was first introduced in US markets in May 2015 to systematically score stocks based on their potential for a short squeeze and has since been expanded to cover Developed Europe markets and Developed Pacific markets. The model utilizes capital constraint (short position PNL) indicators based on transaction-level securities loan data with event indicators to predict squeezes and generate excess alpha from a universe of highly shorted names.

What it does: Uses Securities Finance data and RavenPack dataset for capital constraints factors and market sentiments factors respectively to generate a score ranked from 1 to 100. Based on a hypothesis that squeezes are more likely to occur with stocks where short sellers are experiencing capital constraints (actual or potential losses), the model helps to identify those names at risk of a squeeze, improve the accuracy of short interest signals and provide deeper insight into short positions.

What it shows: Our research suggested that the model can be used to control risk of short squeezes and enhance alpha forecasts based on short interest measures, which was demonstrated by measuring the improvement of our short sentiment factors in a Short Squeeze Model overlay strategy. Also observed was the fact that short squeezes do not occur as frequently as commonly cited and results in a minimal set of outcomes, with an annual average of 1,487 (daily average rate of 0.99%) in Developed Europe, 1,782 (0.77%) in Developed Pacific and 3,886 (1.41%) in the US.

- Short squeeze candidates identified by the model within our highly shorted Developed Europe universe had a 59% greater likelihood of squeezing compared with the base universe.
- In Developed Pacific, squeezes occurred 1.23% of the time among stocks that the model predicted to squeeze, compared with 0.77% for the universe.
- The Short Squeeze Model had the highest hit rate in the US (2.70%) in isolating stocks most likely to squeeze, handily exceeding the universe rate of 1.29%.
- US stocks with the highest probability to squeeze outperformed the universe for open-to- close returns, with an additional 4 bps of return on average and 13 bps versus names least likely to squeeze, persisting out to 1-month (6-month) holding periods with 22 bps (1.52%) and 71 bps (4.72%) of additional alpha, respectively, with similarly robust results to our expanded global coverage.

The full explanation of the investment recipe, industry background, the specifics behind the component building blocks, the data sources and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals), RavenPack

ACCESS FULL REPORT HERE: Expanding Short Squeeze Model to global markets

Equity Short Signals using Related Corporate Bond Aggregates and Equity Short Interest: FTSE Russell Developed Europe & Russell 1000 Index: (Live Since Nov 2019, Historical Data from Jan 2007 – Oct 2019)

What it is: In this research paper we combined the Securities Finance equity Utilization data and aggregated related corporate bond Utilization to identify the benefits for long-short portfolio construction in comparison to using just the equity Utilization on its own. The observed time-period ranges from Jan 2007 – Sep 2019 for Russell 1000 and Jan 2007 – Oct 2019 for FTSE Russell Developed Europe universe.

What it shows: We found evidence that suggests benefits of using a combined sentiment indicator using both the Securities Finance equity Utilization data and aggregated related corporate bond Utilization for portfolio construction during the time-period of our study.

- For the Russell 1000, we found that combining Equity Utilization and Utilization across the related corporate bonds from the issuer gives the best signal to a long-only, short-only and a long-short equity manager.
- For a long-short strategy, using the combined signal improves the overall information ratio by 63% compared to using just Equity Utilization. The combined strategy gave an information ratio of 0.59.
- For the FTSE Developed Europe Universe, we found that using the combined sentiment was best suited to create a long-only and long-short portfolios but using just Equity Utilization still dominated the short side.
- For a long-short strategy, we found the best performance using the combined signal to create the long portfolio and using Equity Utilization only to create the short portfolio. Information Ratio from this strategy beats the Information Ratio from using just the Equity Utilization by roughly 16%.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, FactSet

ACCESS FULL REPORT HERE: **Equity Short Signals using Related Corporate Bond Aggregates and Equity Short Interest: FTSE Russell Developed Europe & Russell 1000 Index**

Securities Finance Factor Performance: (Live Since Aug 2019, Historical Data from July 2009 – May 2019)

What it is: In this research paper, we analyzed the performance of the Securities Finance factors including the Stability metrics across regions during the time-period July 2009 – May 2019. Performance metrics were analyzed across regions for four universes: FTSE Russell Developed Asia Pacific, FTSE Russell Developed Europe, Russell 1000, and Russell 2000.

What it shows: Across the four universes, we found that Short Interest factors, Utilization factors and the Indicator fields had a negative relationship with forward returns which suggests that stocks with relatively high values based on these factors tend to underperform stocks with relatively low factor values.

- We also found evidence that suggested that stocks with high Lendable Stability or high On Loan Stability also tend to underperform stocks with low Stability as short sellers may prefer to borrow stocks from funds with more stable lendable supply.
- Lendable Supply was found to have a positive relationship with forward returns highlighting that the stocks with high Lendable inventory are associated with positive sentiment in comparison to stocks with low Lendable inventory. Lendable inventory could be regarded as a proxy for institutional ownership as most of the inventory was contributed by long-only fund managers looking to earn additional income from securities lending from their long- only portfolio.
- For the Asia Pacific universe, Demand Supply Ratio was found to have the strongest relationship with forward returns followed closely by the DIMV indicator during the time- period of our study.
- For the Developed Europe universe, On Loan Stability and the DIMV indicator had the strongest relationship with 1-month forward returns in terms of information coefficients and the long-short portfolio performance.
- DIMV was also found to have the strongest signal in both Russell 1000 and Russell 2000 universes highlighting the robust performance of this factor.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, FactSet

ACCESS FULL REPORT HERE: FTSE Russell Developed Asia Pacific, FTSE Russell Developed Europe, Russell 1000, Russell 2000

Equity Short Signals from Corporate Bond & CDS Market:(Live Since May 2017, Historical Data from June 2006 – June 2016)

What it is: Demonstrates the analysis of the signal performance of cross-asset measures of shorting activity and negative sentiment for US and European equity stocks, using Securities Finance Equity Utilization, aggregated Bond Utilization and CDS Spreads on 5-year senior corporate debt for the same issuer. The equity universe was primarily comprised of US stocks in the Russell 1000 index and the FTSE Developed Europe index.

What it shows: Our research suggested that a signal comprised of an equal weight of all three signals provided the best return performance for both the Russell 1000 and the FTSE Developed Europe index. Additionally, the information ratio increased by 65% and 20% respectively when compared to a strategy based solely on equity short interest signals.

- For the Russell 1000 index:
  - The long portfolio, by considering CDS spreads and Bond Utilization in addition to Equity Utilization, the Information ratio was 21% higher than using equity data alone and 82% higher than the index.
  - On the short side, combining all three signals did not result in significantly different return profiles when compared to a strategy that used Equity Utilization on its own.
  - For the long/short market-neutral portfolio, the combined strategy produced the highest Information ratio of 0.48. This was 65% higher than using Equity Utilization alone.
- For the FTSE Developed Europe index:
  - The strategy that combined Equity Utilization, Bond Utilization and CDS Spreads generated the highest return for the long portfolio (D1) and the highest Information ratio, 69% higher than the returns generated by the Equity Utilization strategy alone.
  - As with the US universe, the return profiles for the short portfolio did not change significantly when compared to a strategy that uses Equity Utilization alone.
  - The outperformance of a long/short portfolio was the highest for the combined strategy using Equity Utilization, Bond Utilization and CDS Spreads which offered an information ratio of 0.65 that was 20% higher than a strategy using Equity Utilization alone.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Bond Pricing), S&P Global Dow Jones Indices

ACCESS FULL REPORT HERE: Equity Short Signals from Corporate Bond & CDS Market

Introducing Securities Finance Stability Metrics: (Live Since Sept 2016,Historical Data from Jan 2013 – June 2016)

What it is: Aims to demonstrate the newly developed stability metrics focused on lendable inventory in the securities lending market for individual securities, while performing predictive analysis on the forward volatility of the securities lending fee and lendable inventory.

What it does: The focus was primarily on the US stocks in the Russell 1000 index. These stability metrics were calculated using a proprietary methodology that determines the annual turnover in the holdings of each fund and flags them as either low or highly stable sources of inventory.

What it shows: Our research suggested that Lendable Quantity (LQ) stability provided additional information on forward securities lending fee volatility beyond what may be explained by sector, market capitalization, utilization, or fee levels alone.

- In the Russell 1000, stocks with low stability tend to have high securities lending utilization.
- In Stocks with low stability had an abnormally high fee of 30 bps compared to 12-15bps for the rest of the universe.
- LQ stability had a negative relationship with the forward volatility of lendable as % shares outstanding.
    - Lendable inventory volatility was higher for low LQ stability stocks in all sectors except Real Estate.
    - For both large and small cap stocks within the Russell 1000, securities with Low LQ stability had higher forward lendable inventory volatility in the coming months. Stocks with Low LQ stability was 30% more volatile for smaller caps and 37% more volatile for large caps than securities with high LQ stability.

The full explanation of the industry background, the specifics behind the component building blocks and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance

ACCESS FULL REPORT HERE: Introducing Securities Finance Stability Metrics

Factor Crowdedness: (Live Since March 2016, Historical Data from Dec 2011 – Dec 2015)

What it is: A research study that demonstrates how multiple datasets from can be combined to measure factor crowdedness. The focus was on the average Utilization differential between the lowest ranked and the highest ranked stocks within a factor and portray how the trend has evolved over the observed time-period.

What it does: Uses the combination of Securities Finance lending dataset and Alpha Signals data to measure shorting activity to ascertain which factors were getting crowded by short sellers and to understand the directional views of institutional investors. The study utilized US Large Cap universe.

What it shows: Our research suggested that in general growth stocks, low momentum, high beta, and volatile stocks had a higher utilization level than the universe. Summary findings from the research are also presented below:

- Average Utilization in value stocks stood close to its four-year high of 18% as at 31st Dec 2015.
- Investors have been overweighting high beta stocks and underweighting low beta stocks since beginning of 2014. The Utilization gap was around 10% in the last quarter of 2015.
- From July 2014, shorting highly utilized value stocks and buying low utilized value stocks yielded a hefty 50% return on an annual basis.
- Trend reversal in the Book-to-Market factor: short sellers were shorting more of value stocks in the last three quarters of 2015 as compared to prior periods in the study where they were shorting more of growth stocks.
- Sharpe ratios from the value and growth universes improved by 113% and 42% respectively when combined with the low Utilization factor.
    - annual growth stock returns improved by 477 bps.
    - annual value stock returns improved by 689 bps.

The full explanation of the investment recipe, industry background, the specifics behind the component building blocks and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals)

ACCESS FULL REPORT HERE: Factor Crowdedness

Thresholds in Security Lending Metrics: (Live Since Sept 2015, Historical Data from Jan 2007 – March 2015)

What it is: This research identified a unique way of using Securities Finance metrics. These metrics can be used by fund managers to predict Relative Underperformance events and depending upon the characteristics of their fund can put up alerts in their stock selection process to avoid, underweight or even short sell stocks when a stock crosses a particular metric threshold.

What it does: Uses Securities Finance dataset to identify metric thresholds in different regions beyond which a security becomes highly likely to underperform other securities in the following month. The equity universe was primarily composed of: US Large Cap (USLC), US Small Cap (USSC), Developed Europe (EUR) and Developed Pacific (APAC).

What it shows: Our research suggested that stocks in higher buckets were more likely to have Relative Underperformance events as compared to the stocks in lower buckets as stocks in higher buckets had more negative sentiment than the lower buckets.

- Indicative Fee, DCBS, Demand Supply Ratio and Utilization were the most consistent metrics across our universes to have high percentage of Relative Underperformance events and low average annual excess returns in the following month.
- Indicative Fee was used as an overlay on the Demand Supply Ratio buckets to avoid stocks that are expensive to short and shows that the likelihood of a Relative Underperformance event reduced in higher buckets.
- Applying our threshold analysis in a real-world simulation, it was found that stocks in the higher Demand Supply Ratio and Indicative Fee buckets have underperformed their respective universe over the sample period.

The full explanation of the investment recipe, industry background, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals)

ACCESS FULL REPORT HERE: Thresholds in Security Lending Metrics, Thresholds in Security Lending Metrics (ppt)

Short Squeeze Model: (Live Since May 2015, Historical Data from Jan 2011 – March 2015)

What it is: Introduces the Short Squeeze model, which incorporates insights from the transaction-level capital constraint factors and event indicators that demonstrate its use in predicting squeezes as well as alpha generation. Also presents results of strategies using the model as an overlay to short interest factors and our US style models.

What it does: Using short loan transaction data, our model incorporates capital constraint indicators, which identify names where short sellers have increased potential to cover positions and events, identifying catalysts for short squeezes. Combines Securities Finance's transaction-level indicators with RavenPack news events data.

What it shows:

- Our research suggested that short squeeze candidates identified by the model within our highly shorted universe had a 78% greater likelihood of squeezing during the model development period.
- Stocks with the highest probability to squeeze outperform the universe for open-to-close returns, with an additional 7 bps of return on average versus the universe and 12 bps versus names least likely to squeeze. Positive returns extend out to 1-month holding periods with 44 bps and 103 bps of additional alpha, respectively.
- Using the model as an overlay with other short sentiment strategies to close out positions which were at risk of a squeeze in the short portfolios, we reported improved performance of 15 bps on average per month.

The full explanation of the investment recipe, industry background, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals), RavenPack

ACCESS FULL REPORT HERE: Short Squeeze Model

Signal in USD Liquid Investment Grade Corporate Market: (Live Since May 2015, Historical Data from Sept 2009 – March 2015)

What it is: In this paper, portfolios were created using lendable supply data from Securities Finance dataset on the premise that lendable supply can be used as a proxy for institutional ownership.

What it does: Uses Securities Finance dataset to explore the performance of the lendable supply information in the iBoxx USD liquid investment grade corporate bond index (a part of S&P Global Dow Jones Indices) which consists of USD denominated investment grade bonds rated BBB and above issued by corporate issuers from developed countries.

What it shows: Our empirical results suggested that portfolios can be created successfully using the lendable supply information that can either give outperformance or track the index performance even after controlling for duration risk, credit risk, transaction costs and shorting fees.

- High Lendable portfolio outperformed the universe and Low Lendable portfolio underperformed the universe over the September 2009 – March 2015 period.
- Market neutral portfolio gave an annual excess return of 1.98% with an information ratio of 0.45.
- High Lendable portfolio had a bias towards bonds with a higher credit risk and our Low Lendable portfolio had a bias towards bonds with better credit ratings when compared to the iBoxx index.
- Our portfolios can be implemented in the real world as we reported outperformance even after accounting for transaction and shorting costs.

The full explanation of the investment recipe, industry background, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, S&P Global Dow Jones Indices

ACCESS FULL REPORT HERE: **Signal in USD Liquid Investment Grade Corporate Market (whitepaper), Corporate bond signals in securities lending data (ppt)**

Securities Finance Equity Short Factors Performance Update: (Live Since Jan 2015, Historical Data from Jan 2013 – Dec 2014)

What it is: Published as an update to the 2012 paper introducing short sentiment factors and the unique insights that can be gleaned from signals such as Implied Loan Rate and Utilization.

What it does: Updates the performance of SF factors for the two-year period between January 2013 and December 2014.Portfolios were created using underlying SF equity short interest factors on the premise that they can be seen as sentiment indicators towards stocks. This paper primarily focuses on three regions: North America, Developed Europe, and Developed Pacific.

What it shows: Our research suggested that stocks with low Lending Supply or high Short Interest were the key drivers of the results across most of the factors in Developed Europe and Pacific

- Implied Loan Rate was the leading performance factor in North America and Developed Pacific over the review period, with IRs of 1.7 and 2.66, respectively.
- Utilization was the best performing factor in Developed Europe, with an IR of 1.98.
- In both the North America and Developed Pacific universes, there was generally a low correlation between factors which indicates different information content could be derived from each factor signals.

The full explanation of the investment recipe, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals), FactSet

ACCESS FULL REPORT HERE: Securities Finance Equity Factors Performance Update

Signal in the USD Investment Grade Corporate Bond Market: (Live Since Jan 2015, Historical Data from July 2011 – Aug 2014)

What it is: Explores fixed income lendable supply information in the USD investment grade corporate bond market. In this paper, a hypothesis was tested where preference was given to bonds with high lendable supply as more of these bonds tend to be owned by institutional funds and it was expected that these bonds outperform in the near future compared to the bonds with low lendable supply.

What it does: Uses Securities Finance dataset for bond lendable data while the ratings data was sourced from iBoxx (a part of S&P Global Dow Jones Indices). Interest rate data was sourced from the US treasury website. The universe was primarily comprised of plain vanilla fixed coupon bonds, senior unsecured debt, maturing between 2012 and 2050.

What it shows: Our research suggested that liquid portfolios can be created successfully using the lendable supply information that can give outperformance even after controlling for interest rate risk, transaction costs and shorting fees.

- The portfolios can be implemented in the real world as the bonds selected were generally liquid and decent amount of short positions can be taken.
- Cohort study using relative ratios further signifies the result that high lendable bonds were positively associated with higher-than-average future returns and low lendable bonds were positively associated with lower-than-average returns.
- There seems to be a beta effect as well in these portfolios so if the market was going up you can buy bonds with high lendable supply and sell the ones with low lendable supply.

The full explanation of the investment recipe, industry background, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence Securities Finance, S&P Global Dow Jones Indices, US Treasury website

ACCESS FULL REPORT HERE: Signal in the USD Investment Grade Corporate Bond Market

Innovations in Short Loan Transaction Analysis: (Live Since Aug 2014, Historical Data from Jan 2011 – March 2014)

What it is: One of the publications of a series on short squeeze research. In this paper we aim to provide more advanced analytics with the goal to construct a systematic investment process utilizing transaction-level securities lending data. More specifically, we introduce five indicators, PnLImp, OTM%, TransDur, MaxQBins and OTMD2C, to identify when short sellers retreat.

What it does: Uses Securities Finance dataset to ascertain the money-ness of each short sale, i.e., in- or out-of-the-money, an issue confronting short sellers in deciding to maintain or unwind their positions and the urgency of that decision. The primary focus was on the highly shorted companies from the US Total Cap universe.

What it shows: Our research suggested that while short squeezes were rare events, they were more likely when a large concentration of the short sellers were out-of-the-money before major stock-specific events.

- Short squeezes also tend to occur when short sellers have low conviction biases; in other words, when the average short loan transaction was open for a relatively short amount of time.
- In our analysis of TransDur, we found that short squeezes tend to happen more frequently when short sellers do not have long conviction biases. As hypothesized for MaxQBins, short squeezes tend to happen more frequently when the maximum short sellers were experiencing losses very close to the break-even levels.
- Finally, we use several of our new factors to build a preliminary short squeeze model focusing on shorts around earnings announcement dates. Our results demonstrated the usefulness of our new signals when mixed with the general short sentiment strategy in achieving better returns.
- While our model did not predict most of the short squeezes (a very low hit rate event), we showed that trading based on such signals earns a positive alpha of 2.01% for our universe of predicted short squeezes even if such events do not occur, compared with a base universe return of 0.52%.

The full explanation of the investment recipe, industry background, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals)

ACCESS FULL REPORT HERE: Innovations in Short Loan Transaction Analysis

The Long and Short of Short Squeezes: (Live Since Nov2013, Historical Data from Jan 2007 – Sept 2013)

What it is: First publication in a series surrounding the phenomenon of short squeezes whose goal was to construct a systematic way of identifying short squeezes before they occur.

What it does: Uses Securities Finance dataset to lay out a detailed definition of a short squeeze and the characteristics of such events with fine points exemplified by names such as Netflix and Deckers outdoor along with providing broader characteristics of the universe of stocks which satisfy our short squeeze definition including US Total Cap, Developed Europe, Developed Pacific and Emerging Market.

What it shows: Our research suggested that short squeezes tend to be biased to small, illiquid stocks and there was an expected exposure to high volatility, overvalued names.

- US short squeezes were relatively steadier with a slight upward trend from 2011 through 2012 before picking back up again in 2013.
- In the US and Developed Pacific, short squeezes were evenly distributed across sectors based on respective sizes.
- Developed Europe recorded the highest frequency of short squeezes (33%) in Financials, Emerging Markets short squeezes were clustered in Technology (40%).

The full explanation of the investment recipe, industry background, the specifics behind the component building blocks, the source of data and the performance are detailed in the report.

Data Source(s): S&P Global Market Intelligence (Securities Finance and Alpha Signals)

ACCESS FULL REPORT HERE: The Long and Short of Short Squeeze