Shining the light on short interest

August 2024

Alpha Signals

Introducing a Short Sentiment Factor Suite built using data from the global securities lending market

For years the investment community has been hindered by opaque securities lending markets and, in the case of the US, untimely stock exchange published short interest data. However, valuable and unique insights can be gleaned from short sale data which is rich with institutional sentiment information. Indeed, short sellers often face high hurdles, i.e. costs, when placing trades and, as such, must have high conviction. While traditional exchange-based short interest data is limited to bi-monthly updates and US-only coverage, here we introduce a suite of short sentiment factors with timely global coverage derived from S&P Global Securities Finance1 (MSF) information. Utilizing a broad spectrum of securities lending inputs, we include daily indicators such as Active Utilization, Implied Loan Rate and Demand Supply Ratio. Our empirical results suggest outperformance for factors including Active Utilization in Europe and Demand Supply Ratio in the Developed Pacific. We also highlight the desirable information content of these metrics using a return decomposition of the most shorted securities.

This report serves as an update to our original publication introducing the factors in October 2012.

S&P Global
Market Intelligence

INTRODUCTION

Short selling refers to the sale of a security that the seller does not own, where the delivered security is borrowed by the short seller. The intention is to buy the security at a lower price than that at which the security was sold short. When the price of the security rises, the short seller can incur significant losses as the downside potential due to a price rise is unlimited.

In order to lock-in a profit or avoid further losses (where the price of the security has gone up), short sellers need to cover a short position. This involves buying securities in the market and returning the borrowed stock to the lender. The short seller may also be forced to cover positions due to failure to meet a margin call or when the security lender recalls the stock. The resulting buying pressure can drive prices higher in a phenomenon known as a short squeeze. When this happens, short sellers can incur significant losses by purchasing the security at a higher price than that at which it was sold short.

SECURITIES LENDING MARKET

Short sellers need to deliver stock on settlement day, in the same way as any other trade. Since they do not own the stock, they have to borrow it or face penalties for a failed trade. Naked short sales (where the security has not been located and/or borrowed in advance) are now banned in most jurisdictions across the globe. As a result, short sellers almost always need to borrow stock, and as such the resulting lending data provides a close proxy for short selling volumes.

Securities Lending is a market practice whereby securities are temporarily transferred by the lender to the borrower. The borrower is obliged to return the securities either on demand or at the end of an agreed term. To protect the lender against counterparty risk, the above transaction is usually collateralized with cash or other securities of equal or greater value. Where the lender takes a security as collateral, they are paid a fee by the borrower. By contrast, where they are given cash as collateral, they pay the borrower a rebate rate that is lower than the market interest rate (to reflect the intrinsic cost of borrowing the stock). Cash collateral will often be reinvested in an attempt to enhance returns.

The most common reason to borrow a security is to take a short position, usually established with a negative view on a security. As identified by Brent, Morse and Stice (1990), short positions are also established for hedging or arbitrage operations around convertible bonds, options, pending mergers and index arbitrage. Securities lending can also be motivated by financing trades where the lender is seeking to borrow cash against lent securities. It can also be done for dividend related tax arbitrage that can work in the favor of both lender and borrower.

LITERATURE REVIEW

Short sellers have often been blamed for increasing market volatility as well as fueling, and even prolonging, stock market crashes. However, academic evidence suggests short selling improves price discovery and market liquidity and also helps avoid unnecessary overvaluation of securities. As identified in Miller (1977), Jones and Lamont (2002) and Chen, Hong and Stein (2002), short selling constraints lead to over-valuation of securities which subsequently underperform.

The information content in short sales has been a disputed topic among the academic community. Intuitively, securities that have relatively high short interest should underperform as short sellers target overvalued companies. Similarly, securities with low levels of short interest should outperform. Academics supporting this view have found statistically significant results to prove this hypothesis. These findings include Boehmer, Jones and Zhang (2008) which showed heavily shorted securities underperformed less shorted ones. More recently Engelberg, Reed and Ringgenberg (2010) found this relationship to be even stronger around news events.

Another group of academics, however, have found contradicting evidence that suggests heavily shorted securities tend to outperform. This view coincides with the short squeeze phenomenon where heavily shorted stocks subsequently outperform as short sellers are forced to cover positions. Epstein (1995) supported this view of high short interest as a bullish signal. We note that our empirical results in general (see below) are consistent with the former hypothesis that suggests stocks with high (low) short interest tend to under- (out-) perform.

DATA AND METHODOLOGY

Securities lending operates as an "over the counter" market. With daily data capturing the supply, demand and borrow cost of individual securities in the lending market, MSF provides benchmarking and transparency for all stock loan market participants. Information is sourced directly from leading industry participants including prime brokers, custodians, asset managers and hedge funds.

MSF covers more than 3 million intraday transactions, spanning $12 trillion of securities in the lending programs of over 20,000 institutional funds globally. This comprehensive dataset includes a wide range of securities lending metrics collected on a daily frequency. Content includes shares borrowed, inventory of available shares on loan, level of utilization, loan concentration, and stock borrowing costs. It should be noted that MSF captures around 90% of the securities lending market in developed markets. The coverage can be lower for emerging and frontier areas where the securities lending market is not yet fully developed.

While short sale activity is typically associated with a negative view on a stock, as mentioned earlier, this link is complicated as some transactions are motivated by the hedging needs of traders and not purely driven by sentiment. One well-documented bias in securities lending data is related to dividend arbitrage activity. Dividend arbitrage typically occurs when dividends carry a tax credit for local investors which make the dividend worth more to a domestic shareholder than to a foreign entity. The existence of a tax credit creates opportunities for cross-border tax arbitrage in which foreign holders of the local stock transfer dividends to local stock holders. The execution of such a transaction ultimately results in a gradual increase in the demand (and cost) to borrow a stock around the dividend record date as firms hedge the associated market risk. This clouds the ability to detect negative sentiment around company prospects. For example, it is prevalent in European stocks as taxation policy there is highly fragmented. Since raw securities lending information is affected by this phenomenon, we take special care to remove any bias by applying MSF's proprietary algorithm to filter out positions associated with a dividend arbitrage trade.

We also adjust raw MSF data for corporate actions such as stock splits and reverse stock splits to provide a standardized indicator through time. Note additional research is currently underway that seeks to reduce the noise associated with other non- sentiment related short positions involving convertible and merger arbitrage. Stay tuned for the results.

With this, we introduce the indicators included in our initial Short Sentiment factor suite:

- Active Utilization
- Implied Loan Rate
- Days to Cover
- Demand Supply Ratio
- Lending Supply
- Short Concentration Ratio
- Short Interest

We also include the three measures which comprise Short Concentration Ratio, namely Demand Value Concentration, Inventory Value Concentration and On Loan Value Concentration, along with Utilization,

which is the pre-filtered metric underlying Active Utilization. Individual factor definitions are included in the Appendix.

Factor performance and attribution results are available over numerous universes on the Data Analytics & Research Platform. For this paper, we will concentrate our efforts on four of the more common including:

- S&P Developed Europe (EUR)
- S&P North America (NA)
- S&P Developed Pacific (PAC)
- S&P Emerging Markets (EM)

Recall that S&P Global universes are constructed to represent 95% of the cumulative free float market cap of each member country, subject to $250 million and $100 million market cap minimums for developed and emerging market securities, respectively. Table 1 lists average universe size and coverage over time for several of the Short Sentiment factors. Coverage is comprehensive for most regions with the exception of EM2.

Table 1: Monthly universe coverage averages, Jan 2007 – Aug 2012

	Full Universe Count	Factor Coverage
EUR	1888	90%
NA	1299	90%
PAC	1854	88%
EM	2358	29%

Source: S&P Global

The Data Analytics & Research Platform includes several methods for testing factor efficacy. To capture performance at the extremes, which is more pertinent to short sentiment indicators, here we focus on equal-weight decile spreads. The spread is calculated based on an investment strategy that simultaneously buys (sells) the highest (lowest) rated decile (quintile for EM).

In the next section we report results for several of the key Short Sentiment indicators. Factor scores are tabulated on a monthly basis, and performance is computed in local currency for 1-, 3- and 6-month (cumulative) returns with a common start date of January 2007. We note that US currency results are also available on the Data Analytics & Research Platform, and that performance is consistent with the local currency results shown here.

RESULTS

Active Utilization

Active Utilization represents the percentage of shares currently lent by custodians relative to the amount of stock in their lendable inventory pool. It uses a MSF algorithm to remove certain buffers that custodian lenders might have in place to give a more realistic picture of the lendable inventory. A high score means that a large amount of the company's lendable inventory is out on loan and generally reflects a negative sentiment. Unlike short interest measures based on percent of total shares sold short, this metric includes a more accurate representation of available supply.

Active Utilization and *Utilization* factors are similar in intuition as they both classify supply and demand shifts in the equity lending market. However *Active Utilization* differs from *Utilization* in that stocks not actively lent are filtered out. This is done to take into consideration buffers or restrictions that the custodian lenders might have in their lending programs.

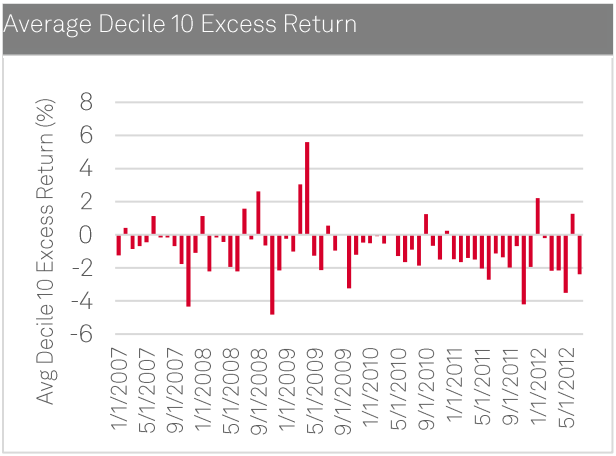
Table 2 summarizes decile (quintile for EM) return spread performance statistics for each universe over the analysis period. We report the average (Avg), standard deviation (StdDev) and hit rate (percent of months with positive performance). We observe a positive 1-month Avg for EUR (0.39%) and NA (0.52%). In fact, results persisted out to 6-month holding periods with an Avg of 1.00% for EUR and 1.40% for NA. While EM also posted a positive 1-month Avg (0.40%), performance was less informative over extended holding periods. For PAC, *Active Utilization* tended to underperform with a 1-month Avg of -0.23% and with positive spreads less than half of the months (hit rate 44.1%).

Table 2: Active Utilization quantile return spread statistics, Jan 2007 – Aug 2012

	1-m			3-m			6-m		
	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)
EUR	0.39	2.0	57.4	0.92	4.1	60.6	1.00	5.8	60.3
NA	0.52	3.0	66.2	0.83	5.3	65.2	1.40	7.5	66.7
PAC	-0.23	3.6	44.1	-1.23	6.2	42.4	-2.96	10.7	41.3
EM	0.40	4.2	57.4	0.43	9.2	54.6	-0.38	16.5	57.1

Source: S&P Global

Figure 1: NA Active Utilization decile 10 excess returns Jan 2007–Aug 2012



Average D10 Excess Return: -0.341 Std Dev:1.65

Source: S&P Global

Hit rates for NA were impressive over each holding period, substantiating the increasing return spreads out to 6 months. Figure 1 highlights the time series characteristics of 1-month decile 10 excess returns. Recall here we expect decile 10 to perform poorly relative to the universe, given that it consists of those stocks with the highest levels of *Active Utilization*. We indeed observe that underperformance of bottom decile returns was a key driver of the results. The overall trend is apparent especially during the height of the financial crisis in 2008 and during a notable string of mostly negative results since 2011. However, one outlying event is the back-to-back sharp upward spikes in March & April 2009 as markets reached troughs and risk-on trades ensued during this inflection period.

Implied loan rate

Short sellers face significant hurdles to successful strategy execution due to market frictions, such as the unavailability of shares to be borrowed, search costs involved in finding a stock lender, or high borrowing costs. A security could have high borrowing costs due to high shorting demand or low supply. *Implied Loan Rate* measures the cost of borrowing a particular stock and is indicative of the shorting flow data. This information is of particular interest to both long/short and long only managers to gauge sentiment. *Implied Loan Rate* is derived using a MSF proprietary algorithm which is applied daily on the transactions received from contributing participants. Each transaction is checked to identify and remove the following type of trades:

- Term transactions
- Finance transactions
- Mismarked transactions
- Block transactions
- Outliers

The remaining transactions are then weighted by loan value and time to arrive at the implied loan rate for a particular security. A high *Implied Loan Rate* implies more negative sentiment for a stock, and as such we sort this factor in ascending order such that decile 1 (10) consists of firms with low (high) implied rates.

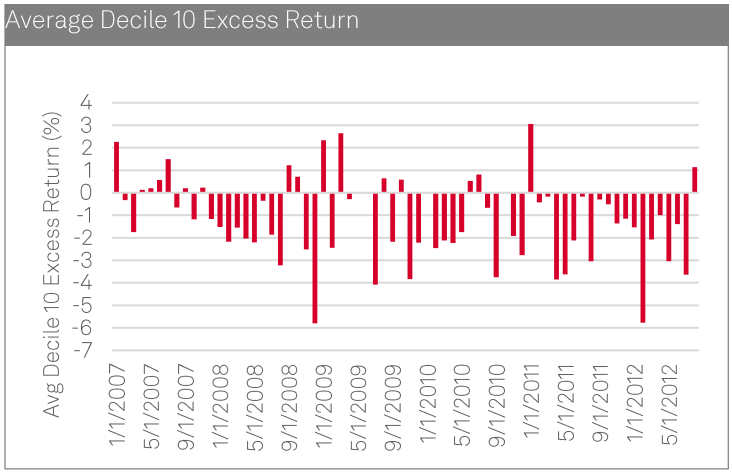
Table 3: Implied Loan Rate quantile return spread statistics, Jan 2007 – Aug 2012

	1-m			3-m			6-m		
	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)
EUR	1.53	2.9	69.1	5.12	4.5	89.2	9.45	6.5	87.1
NA	0.49	2.3	61.8	1.37	4.4	57.6	1.76	6.4	55.6
PAC	0.28	4.0	52.9	0.50	6.4	59.1	-0.41	10.0	54.0
EM	0.59	4.1	52.9	1.68	8.2	69.7	2.48	14.4	69.8

Source: S&P Global

Implied Loan Rate proved effective in each universe (Table3). EUR posted the top results over 1-month (Avg: 1.53%; hit rate 69.1%) and 3-month (Avg 5.12%; hit rate 89.2%) holding periods. However, we especially highlight the impressive 6-month return spread Avg of 9.45% and hit rate of 87.1%. Figure 2 displays the time series characteristics of 1-month decile 10 excess returns and again illustrates the significant underperformance to bottom rank (i.e. high implied rate) names. We also note robust results in EM. This is confirmed by a 1-month return spread Avg (hit rate) of 0.59% (52.9%), which extended to 2.48% (69.8%) over a 6-month holding period.

Figure 2: EUR Implied Loan Rate decile 10 excess returns, Jan 2007 – Aug 2012



Average D10 Excess Return: -1.118 Std Dev: 1.84

Source: S&P Global

Demand Supply Ratio

Demand Supply Ratio measures the aggregate amount of stock borrowed in the market from both beneficial owners and brokers (net of double counting) relative to the lendable inventory. It is different from both *Utilization* and *Active Utilization* as this indicator includes the stock lent by custodians and also the amount borrowed from prime brokers thereby giving a complete picture of borrow demand in the market. Recall that the utilization factors look at stock lent by custodians only. A high *Demand Supply Ratio* implies negative sentiment for a stock. This indicator may also serve as an early warning signal for potential short squeeze candidates, as a very high ratio indicates the lendable stock is being exhausted.

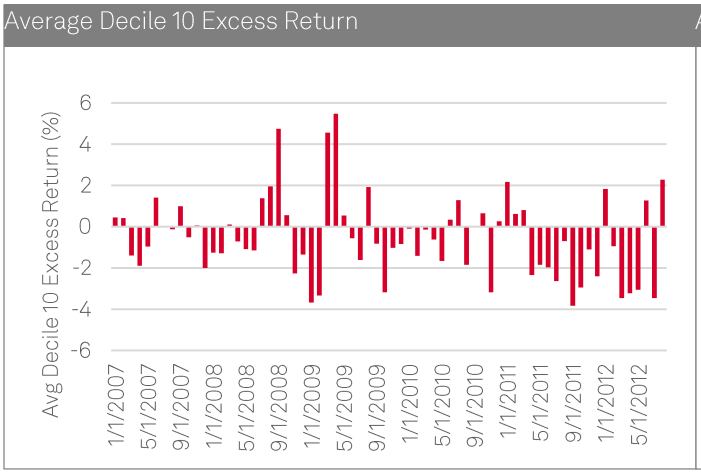
Demand Supply Ratio return spread performance statistics are displayed in Table 4. This factor consistently outperformed across all universes as exemplified by a 1-month return spread Avg (Hit Rate) of 0.42% (63.2%) for EUR and 0.79% (70.6%) for PAC. We remark that the robust return spreads were particularly driven by consistent bottom decile performance for all regions (see Figures 3 and 4 for EUR and PAC examples, respectively).

Table 4: Demand Supply Ratio quantile return spread statistics, Jan 2007 – Aug 2012

	1-m			3-m			6-m		
	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)
EUR	0.42	3.0	63.2	1.78	4.5	72.3	2.89	6.1	72.6
NA	0.50	2.9	58.8	0.86	5.2	69.7	1.36	7.5	63.5
PAC	0.79	2.5	70.6	1.21	4.0	72.7	1.59	6.8	71.4
EM	0.82	3.9	55.9	1.58	7.1	65.2	2.41	10.1	69.8

Source: S&P Global

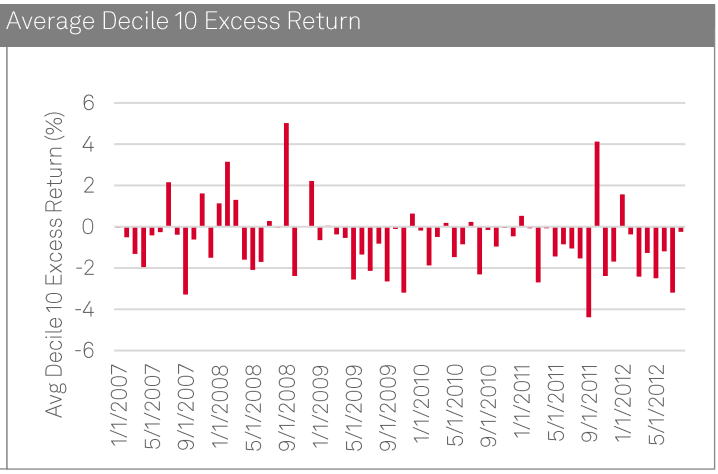
Figure 3: EUR Demand Supply Ratio decile 10 excess returns, Jan 2007 – Aug 2012



Average D10 Excess Return: -0.549 Std Dev: 2.00

Source: S&P Global

Figure 4: PAC Demand Supply Ratio decile 10 excess returns, Jan 2007 – Aug 2012



Average D10 Excess Return: -0.650 Std Dev: 1.70

Source: S&P Global

Lending Supply

Lending Supply measures the total quantity of stock made available by custodian lenders relative to the total shares outstanding in that stock. It can be used as a proxy of institutional ownership as much of the lendable supply comes from the custodian lenders of pension and mutual funds. A high number may be indicative of concentrated institutional ownership, and our factor favors those stocks with higher levels of lendable supply. As such, we rank this indicator in descending order so decile 1 (10) contains stocks with the most (least) lendable supply.

In Table 5 we summarize *Lending Supply* return spread performance statistics. We highlight a positive 1-month Avg (Hit Rate) for EUR 1.07% (61.8%) and for EM 0.11% (55.9%), which persisted out to a 6-month holding period for EUR. We also note that the 1-month Avg for NA (-0.08%) and PAC (-0.18%) indicates underperformance in these markets.

Table 5: Lending Supply Ratio quantile return spread statistics, Jan 2007 – Aug 2012

	1-m			3-m			6-m		
	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)
EUR	1.07	3.2	61.8	3.10	4.6	72.7	6.02	7.1	79.4
NA	-0.08	3.3	50.0	-0.35	5.7	50.0	-0.66	7.5	46.0
PAC	-0.18	3.1	51.5	-0.79	5.3	56.1	-2.32	8.0	49.2
EM	**0.11**	**2.8**	**55.9**	**-0.21**	**4.8**	**53.0**	**-1.30**	**6.6**	**42.9**

Source: S&P Global

Short Interest

Short Interest measures the total quantity of stock borrowed in the market relative to total shares outstanding. As suggested earlier, we rank this factor according to traditional interpretations which believe that as the prospects of a company deteriorate, more investors tend to sell short. It is important to note that we have historically maintained a similar *Short Interest Ratio* factor as part of the Data Analytics & Research library, but that indicator is built using US exchange-based data, which is reported only twice per month. Benefits of our new measures include more timely delivery and global coverage. A quick example of this difference is displayed in Figure 5. Here we see June 2012 daily ranks for Johnson & Johnson over both our pre-existing *Short Interest Ratio* indicator and the newly introduced MSF-based *Short Interest* factor. The image indeed confirms the lagged response time intrinsic to exchange-based data, as we can see the MSF-based metric moves several days in advance of the exchange-based measure. An upcoming report will explore these differences in greater detail.

Short Interest return spread performance statistics are listed in Table 6. The return spread Avg for EUR is consistently negative (1-m Avg: -0.41%; 3-m Avg: -0.83%; 6-m Avg -1.38%). This result is more in-line with a contrarian viewpoint that high levels of short interest indicate an overly pessimistic view as well as pent up demand, as shorts must eventually buy stock to cover.

However, NA, PAC and EM performance concurs with the more traditional interpretation. Specifically, NA (EM) posted a 1-month Avg return spread of 0.27% (0.31%) with a 57.4% (55.9%) hit rate. PAC results were stronger with a 1-month(6-month) Avg return spread of 0.66% (3.01%) and hit rate of 58.8% (69.8%). Indeed, PAC 1-month decile 10 excess returns displayed in Figure 6 (see Page 6) confirm that associated negative returns in general contributed to the outperformance of the factor return spreads.

Figure 5: Johnson & Johnson factor ranks, Jun 1, 2012 – Jun 29, 2012

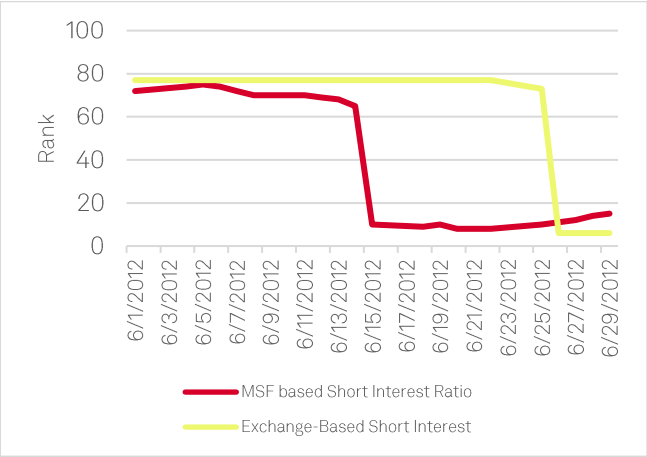
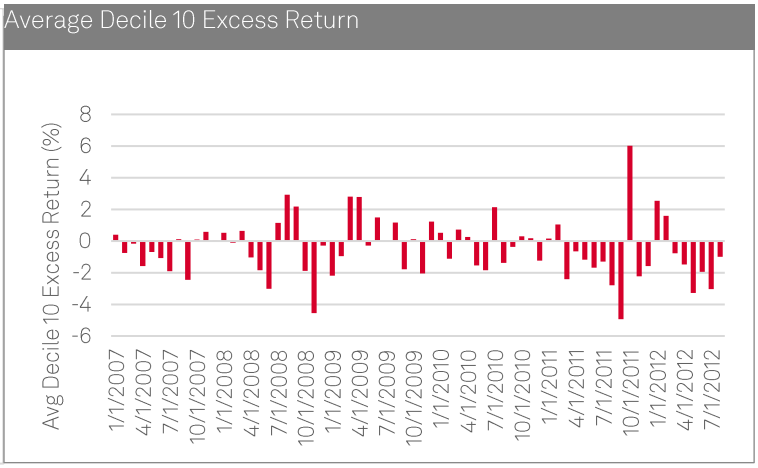


Figure 6: PAC Short interest decile 10 excess returns, Jan 2007- Aug 2012



MSF-based Short Interest Exchange-based Short Interest Ratio Average D10 Excess Return: -0.480 Std Dev: 1.85

Source: S&P Global

Table 6: Short Interest quantile return spread statistics, Jan 2007 – Aug 2012

	1-m			3-m			6-m		
	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)	Avg(%)	StdDev(%)	Hit Rate(%)
EUR	-0.41	3.4	50.0	-0.83	5.0	47.7	-1.38	6.6	48.4
NA	0.27	3.5	57.4	0.59	5.6	59.1	0.75	7.3	61.9
PAC	0.66	2.8	58.8	1.59	4.7	66.7	3.01	5.7	69.8
EM	0.31	4.4	55.9	0.26	9.0	65.2	0.84	14.0	73.0

Source: S&P Global

ATTRIBUTION

Next we turn to a factor attribution analysis. We begin with an examination of active exposures for bottom rank names, as these would be those names with the most extreme negative sentiment. Our analysis is performed relative to several more traditional factors including:

- *Price to Book* Positive exposure implies bias to growth stocks
- *Beta* Positive exposure implies bias to high beta
- *Market Cap* Positive exposure implies bias to large capitalization
- *1-m Stock Realized Volatility* Positive exposure implies bias to high volatility
- Table 7 summarizes the results. Based on a bottom up analysis of factor scores, we identify those Short Sentiment indicators with a corresponding low, moderate or high level of positive/negative exposure to our traditional metrics.

We highlight several interesting results. First, we observe fairly significant biases to small cap names in general across factors and universes. Yet, we note a large cap tilt for the bottom *Short Interest* names in EUR, PAC and EM.

Table 7: Short Sentiment average bottom rank versus top rank active exposures, Jan 2007 – Aug 2012

		EUR	NA	PAC	EM
Price/Book	Active Utilization		+	+ +	
	Implied Loan Rate	- -		+ +	
	Demand Supply Ratio		+	+ +	
	Lending Supply	- -	+		
	Short Interest	+		+	
Beta	Active Utilization		+	+ +	+ +
	Implied Loan Rate	+		+ +	+ +
	Demand Supply Ratio	+	+	+	+ +
	Lending Supply	-	-		
	Short Interest	+ +	+ +	+	+ +
Market Cap	Active Utilization	- -	- - -	- - -	- -
	Implied Loan Rate	- -	- - -	- - -	- -
	Demand Supply Ratio		- - -		
	Lending Supply	- - -		- - -	- -
	Short Interest	+ +	- -	+ +	+
1-m Stock Realized Volatility	Active Utilization	+	+ + +	+ +	+ +
	Implied Loan Rate	+	+ +	+ +	+
	Demand Supply Ratio	+ +	+ + +	+ +	+ +
	Lending Supply				
	Short Interest	++	+++	++	++

Source: S&P Global

High Positive Exposure ++
Moderate Positive Exposure ++
Low Positive Exposure +
Insignificant

Low Negative Exposure -
Moderate Negative Exposure - -
High Negative Exposure - - -

We also note a bias, in general, to high beta across factors and universes. Finally, we remark on the tendency towards high volatility names with *Lending Supply* as an exception. We point out that Beta is a long-term (60-month) metric while our volatility indicator is a short-term (1-month) measure and indeed displays more significant exposures.

As an additional robustness check, we also examined bottom versus top decile (quintile for EM) results using the Northfield attribution system and Global Risk Model (see www.northinfo.com). The Global model includes factors accounting for region, sector, interest rates, oil prices, currency, value/growth, market development and company size (along with several blind factors). Details are presented in Table 8.

Table 8: Short Sentiment bottom versus top rank annualized return decomposition, Jan 2007 – Aug 2012

		EUR	NA	PAC	EM
	Total Active (%)	-5.37	-10.34	-1.21	-5.24
Active Utilization	Stock Specific (%)	-4.94	-11.86	3.08	-6.07
	Factor Model Specific (%)	-0.81	3.49	-3.75	1.95
	Total Active (%)	-13.13	-6.99	-7.91	-7.40
Implied Loan Rate	Stock Specific (%)	-9.20	-2.89	-1.24	-6.96
	Factor Model Specific (%)	-3.00	-3.06	-6.66	0.61
	Total Active (%)	-5.80	-9.72	-10.28	-9.01
Demand Supply	Stock Specific (%)	-5.57	-11.48	-11.81	-14.01
	Factor Model Specific (%)	-0.11	3.63	1.45	7.08
	Total Active (%)	-9.01	3.26	1.50	-0.48
Lending Supply	Stock Specific (%)	-4.89	8.51	5.85	4.41
	Factor Model Specific (%)	-5.80	-5.32	-5.00	-5.12
	Total Active (%)	0.76	-6.95	-10.33	-4.93
Short Interest	Stock Specific (%)	-5.14	-12.13	-12.81	-15.24
	Factor Model Specific (%)	6.43	6.40	2.92	11.51

Source: S&P Global

As expected, we see the bottom ranks underperform across each factor/universe combination. We also note that stock-specific return, i.e. that not attributable to the Northfield risk model factors, indeed represents a significant portion of the active returns in general. For example, the EUR *Active Utilization* bottom decile annualized return is -5.37% with a stock specific return of -4.94%. This indicates that our Short Sentiment factors offer a highly unique return source not captured by traditional risk models.

Next we consider average equal-weight sector exposures of bottom versus top rank names. EUR results are displayed in Table 9 and the remaining universes are included in the Appendix (Tables A1 – A3). We highlight significant exposures in excess of 10% in magnitude.

Table 9: EUR Short Sentiment bottom versus top decile sector exposures (%), Jan 2007 – Aug 2012

	Active Utilization	plied Loan Rate	Demand Supply Ratio	Lending Supply	Short Interest
Basic Materials	-0.5	-1.7	-0.9	-1.1	2.0
Cyclical Goods & Services	3.8	-4.7	9.4	-11.9	14.9
Energy	1.3	0.9	1.0	4.3	-4.6
Financials	7.8	16.3	-5.3	22.1	-23.7
Healthcare	0.2	-0.1	0.8	0.2	3.3
Industrials	-5.0	-3.8	0.3	-14.5	5.9
Non-Cyclical Goods & Services	-5.0	-4.4	-6.5	0.9	-2.3
Technology	2.2	-0.4	3.7	-4.2	8.5
Telecommunication Services	-1.5	-0.6	-0.5	-0.3	0.2
Utilities	-3.2	-1.7	-1.8	3.1	-3.7

Source: S&P Global

EUR sector exposures are insignificant in general with the exception of Financials, which record large concentrations in the highest *Implied Loan Rate* (16.3%) and lowest *Lending Supply* (22.1%) and *Short Interest* (-23.7%) scores on a fairly consistent basis throughout the analysis period. This result is not surprising given the direct link between the sovereign debt crisis and Financials. We further note that EUR sector active exposures for *Implied Loan Rate* (16.3%) and *Short Interest* (-23.7%) are significant and directionally opposite to each other. This is consistent with our expectations given the short sale ban which was reinstated for financials within this region during our analysis period. Although the implied loan rates were indicative of the short sentiment in financials, this short risk was not evident in the short interest factor.

We also note that PAC is also characterized by moderate sector positioning whereas NA displays enhanced exposures across a more diverse set of sectors. For EM, Technology was the most prominently exposed sector with overweights in the bottom deciles of *Implied Loan Rate* (10.5%), *Demand Supply Ratio* (19.3%) and *Short Interest* (11.2%).

Finally we present factor correlation analyses based on monthly decile (quintile for EM) return spreads over the 2007-2012 period. EUR results are displayed in Table 10 and the remaining universes are included in the Appendix (Tables A4 – A6).

Table 10: EUR Short Sentiment 1-month decile return spread correlations, Jan 2007 – Aug 2012

	Active Utilization	Demand Supply	Implied Loan Rate	Lending Supply	Short Interest
Active Utilization	1.00				
Demand Supply	0.46	1.00			
Implied Loan Rate	0.48	0.27	1.00		
Lending Supply	0.18	-0.3	0.62	1.00	
Short Interest	0.16	0.74	-0.22	-0.75	1.00

Source: S&P Global

We observe that each signal offers differing information content with low correlations in general. The highest co-movement is reported for *Demand Supply Ratio* and *Short Interest* (0.74) which is not surprising given that both are varying gauges of short sales.

We also, remark that PAC and EM correlations are similar in direction and magnitude to those seen in EUR. However, notable exceptions are posted for NA including significant correlations for *Active Utilization* with *Demand Supply Ratio* (0.96) and *Short Interest* (0.79).

CONCLUSION

In this report we introduce a new suite of systematic factors capturing institutional sentiment from the global securities lending markets. Built using unparalleled proprietary data provided by S&P Global Securities Finance (MSF), these indicators illuminate what otherwise had been an opaque segment of the market. Covering a robust global universe, our short sale metrics provide daily data ranging from supply and demand to borrow rates and market shares.

We begin with background of S&P Securities Finance and short sales. Next, we introduce our Short Sentiment indicators including *Active Utilization*, *Implied Loan Rate* and *Demand Supply Ratio*, among others. Valuable insights are gleaned from these unique measures. This is demonstrated by *Active Utilization* outperformance in EUR and NA with 1-month return spreads of 0.39% and 0.52%, respectively. We also highlight EUR positive return spreads for *Demand Supply Ratio* which extended from a 1-month average of 0.53% out to 2.90% at a 6-month horizon.

Attribution analysis rounds out the study and includes factor exposure, return decomposition and correlation reviews. We particularly underscore that stock-specific returns represent a significant portion of the active returns in general (as indicated by the Northfield Global Model), which suggests a unique source of excess return. For example, the EUR *Active Utilization* stock specific return represents 92% of the overall bottom decile annualized return. Our empirical results also suggest regional effects play a role in signal attributes as exemplified by a large cap bias in EUR, PAC and EM to *Short Interest* whereas NA has a small cap bias to this measure.

While this initial piece provides a detailed overview of our exciting new indicators, we have only begun to tap its potential. Stay tuned for future work centering on short-term changes and combined factor approaches.

APPENDIX

Table A1

NA Short Sentiment bottom versus top decile sector exposures (%), Jan 2007 – Aug 2012

	Active Utilization	Implied Loan Rate	Demand Supply Ratio	Lending Supply	Short Interest
Basic Materials	5.5	19.6	2.6	16.1	-5.8
Cyclical Goods & Services	9.4	-1.8	9.9	-5.9	11.4
Energy	1.9	6.5	3.4	20.6	-11.9
Financials	-4.3	-1.3	-5.3	0.3	-6.9
Healthcare	-2.2	-4.0	-1.5	-8.2	6.4
Industrials	-5.1	-6.9	-5.4	-8.1	1.0
Non-Cyclical Goods & Services	-2.1	-2.3	-2.0	-0.4	-1.4
Technology	0.0	-4.5	0.9	-15.5	9.4
Telecommunication Services	0.3	-1.5	0.6	0.6	0.9
Utilities	-3.3	-4.4	-3.1	-0.1	-2.6

Source: S&P Global

Table A2

PAC Short Sentiment bottom versus top decile sector exposures (%), Jan 2007 – Aug 2012

	Active Utilization	Implied Loan Rate	Demand Supply Ratio	Lending Supply	Short Interest
Basic Materials	-0.2	0.2	2.7	-2.4	3.9
Cyclical Goods & Services	5.1	4.1	8.6	6.7	7.6
Energy	-0.6	0.2	-0.8	-1.9	-0.1
Financials	-2.8	-4.2	-12.7	-4.3	-12.7
Healthcare	-1.0	-0.1	0.2	1.4	-1.1
Industrials	-1.7	-2.5	2.8	-5.2	5.0
Non-Cyclical Goods & Services	1.8	-0.5	-2.0	1.5	-1.5
Technology	1.7	3.9	5.6	1.5	3.2
Telecommunication Services	-1.1	-0.7	-2.4	0.2	-1.7
Utilities	-1.5	-0.8	-2.1	1.2	-2.1

Source: S&P Global

Table A3

EM Short Sentiment bottom versus top decile sector exposures (%), Jan 2007 – Aug 2012

	Active Utilization	Implied Loan Rate	Demand Supply Ratio	Lending Supply	Short Interest
Basic Materials	0.6	-4.1	-1.5	3.8	-0.3
Cyclical Goods & Services	0.6	0.7	1.0	-1.6	2.5
Energy	-3.3	-2.7	-3.5	1.7	-3.4
Financials	-1.1	-3.9	-8.1	-3.6	-6.3
Healthcare	1.0	-1.2	-0.1	1.6	0.4
Industrials	-3.3	6.5	7.3	-1.6	12.4
Non-Cyclical Goods & Services	-2.4	-0.8	-7.9	-0.2	-6.1
Technology	7.3	10.6	19.3	-1.4	11.2
Telecommunication Services	-0.5	-4.5	-4.6	-1.8	-5.2
Utilities	1.2	-1.3	-1.9	2.9	-5.1

Source: S&P Global

Table A4

NA Short Sentiment 1-month decile return spread correlations, Jan 2007 – Aug 2012

	Active Utilization	Demand Supply Ratio	Implied Loan Rate	Lending Supply	Short Interest
Active Utilization	1.00				
Demand Supply Ratio	0.96	1.00			
Implied Loan Rate	0.16	0.10	1.00		
Lending Supply	-0.26	-0.26	0.68	1.00	
Short Interest	0.79	0.81	-0.31	-0.74	1.00

Source: S&P Global

CORRELATIONS

Table A5

PAC Short Sentiment 1-month decile return spread correlations, Jan 2007 – Aug 2012

	Active Utilization	Demand Supply Ratio	Implied Loan Rate	Lending Supply	Short Interest
Active Utilization	1.00				
Demand Supply Ratio	0.20	1.00			
Implied Loan Rate	0.82	0.15	1.00		
Lending Supply	0.30	0.14	0.51	1.00	
Short Interest	0.05	0.70	-0.17	-0.52	1.00

Source: S&P Global

Table A6

EM Short Sentiment 1-month decile return spread correlations, Jan 2007 – Aug 2012

	Active Utilization	Demand Supply Ratio	Implied Loan Rate	Lending Supply	Short Interest
Active Utilization	1.00				
Demand Supply Ratio	0.31	1.00			
Implied Loan Rate	0.67	0.30	1.00		
Lending Supply	0.09	-0.09	0.32	1.00	
Short Interest	0.14	0.84	-0.10	-0.30	1.00

Source: S&P Global

Definitions

Active Utilization represents the percentage of stocks currently lent by custodians relative to the realistic amount of stock held by them in their lendable inventory pool. S&P Global ranks this factor in ascending order.

Implied Loan Rate Value and time weighted average fee provides a benchmark for the rate charged by custodians to the borrower of a security. S&P Global ranks this factor in ascending order.

Days to Cover Number of days it would take to buy back total quantity of stock borrowed in the market based on average volume traded in the last 30 trading days. S&P Global ranks this factor in ascending order.

Demand Supply Ratio amount of stock borrowed in the market relative to the lendable inventory of the stock. S&P Global ranks this factor in ascending order.

Demand Value Concentration Distribution of broker demand, where a very small number indicates a large number of active brokers and 1 indicates a single active broker. S&P Global ranks this factor in ascending order.

Inventory Value Concentration Distribution of lendable inventory, where a very small number indicates a large number of lenders and 1 indicates a single lender with the entire inventory. S&P Global ranks this factor in ascending order.

Lending Supply Quantity of shares made available by custodians in their lending programs relative to the total shares outstanding in that stock. S&P Global ranks this factor in descending order.

On Loan Value Concentration Distribution of lenders, where a very small number indicates a large number of lenders and 1 indicates a single lender with all the value on loan. S&P Global ranks this factor in ascending order.

Short Concentration Ratio Distribution of lendable inventory, prime broker demand and custodians who are lending the stock. A very small number indicates a large number of lenders/prime brokers and 1 indicates a single lender/prime broker with all the inventory. S&P Global ranks this factor in ascending order.

Short Interest Number of shares borrowed in the market relative to the total shares outstanding. S&P Global ranks this factor in ascending order.

Utilization Percentage of stock currently lent by the custodians relative to the amount of stock held by them in their lendable inventory pool. S&P Global ranks this factor in ascending order.

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