

Introduction

The Liquidity style factor in the new and enhanced Barra Europe Equity Model (EUE3) helps to assess the systematic risk associated with infrequent trading. The Liquidity factor contains three turnover descriptors that measure the amount of the issuer’s total capitalization traded in the last 1-12 months. At the individual security level, liquidity is related to the cost of trading. The more liquid the stock, the lower the company’s cost of capital and, for any given level of expected cash flows generated by the company, the higher the stock price. In other words, investors may require higher returns on less liquid stocks to compensate for the liquidity costs they bear.

Many different aspects of liquidity have been studied. In academic literature, the typical measures of liquidity are the bid-ask spread (Amihud and Mendelson, 1986), dollar volume (Brennan, Chordia and Subrahmanyam, 1998), price impact of a unit trade size (Brennan and Subrahmanyam, 1996) and turnover (Datar, Naik and Radcliffe, 1998). Turnover—the reciprocal of the average holding period of stocks—is a proxy for liquidity if investors reduce their trading frequency of illiquid stocks. Liquidity risk has recently been studied by Acerbi and Scandolo (2008) in the context of coherent risk measures. Size has also been studied as an important aspect of liquidity, as it tends to be less costly to trade stocks of larger companies. The EUE3 Liquidity factor more broadly reflects the aspect of liquidity not captured by market capitalization (the EUE3 Size factor).

In this paper we examine the characteristics of the Liquidity factor in EUE3. We analyze how the risk and return of the liquidity factor changes with the market cycle, look at the relationship between size, sector, and liquidity, and examine the link between the significance of the Liquidity factor and market performance.

Style Factor Performance through the Market Cycle

Over the last 15 years we have seen two major cycles in broad European market performance, illustrated in Figure 1. Starting approximately in January 1995, there was a broad market rally followed by a reversal in March 2000. The next market upturn started in March 2003 and lasted until approximately May 2007. Since then, the market has been in a broad downturn, although there have been signs of positive performance in the last three months.

Figure 1: European Market Performance, 1994-2009

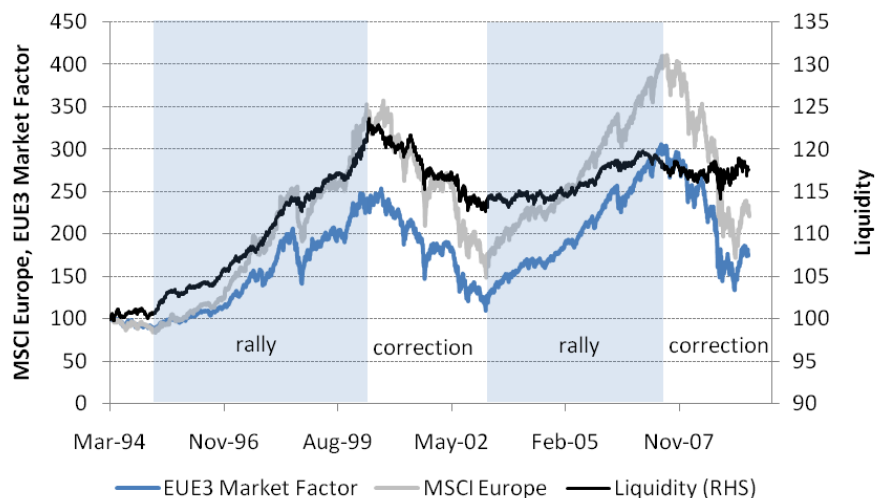


Table 1 examines the performance of daily returns of EUE3 style factors during the four periods identified. In all four periods, Liquidity has a relatively high realized daily return volatility of between 1.6% and 4%, ranking third or fourth out of the nine style factors on this measure. We also see that while there was a significant difference in the performance of the Liquidity factor in both return and risk between the rally and the correction in the first market cycle, in the later cycle the dispersion in return between the phases is relatively mild, while the dispersion in risk is still pronounced. In the first rally of 1995-2000, the Liquidity factor had the second best risk-adjusted return of all style factors due to the factor's low risk and high return. There was a significant premium earned by stocks with high turnover during this upturn. As the market corrected between August 2000 and January 2003, Liquidity had a negative return, making it the third worst performing factor in terms of risk-adjusted returns. In the upturn of 2003-2007, Liquidity earned a modest return of 1% per year and was in the middle of the spectrum in terms of risk adjusted performance. In the recent market correction, it earned a slightly negative return of -0.4% and kept its position as the median ranking style factor according to risk adjusted returns.

Table 1: Annualized Return and Risk Characteristics of EUE3 Style Factors

January 1995 - March 2000				April 2000 - March 2003			
	Return	Risk	Return/Risk ratio		Return	Risk	Return/Risk ratio
MOMENTUM	7.8%	2.4%	3.24	EARNYIELD	8.2%	2.2%	3.76
LIQUIDITY	3.8%	1.6%	2.37	MOMENTUM	11.7%	3.5%	3.38
SIZE	2.2%	3.4%	0.67	DIVYIELD	4.4%	1.6%	2.71
DIVYIELD	0.9%	1.4%	0.65	VALUE	1.5%	2.0%	0.75
VOLATILITY	1.9%	3.7%	0.51	SIZE	3.9%	5.3%	0.74
VALUE	0.7%	1.5%	0.45	LEVERAGE	-0.7%	1.3%	-0.56
LEVERAGE	0.3%	1.0%	0.30	LIQUIDITY	-1.8%	3.1%	-0.58
EARNYIELD	0.4%	1.4%	0.28	VOLATILITY	-9.8%	10.0%	-0.98
GROWTH	-0.5%	1.2%	-0.41	GROWTH	-3.0%	1.6%	-1.82
April 2003 - May 2007				June 2007 - July 2009			
	Return	Risk	Return/Risk ratio		Return	Risk	Return/Risk ratio
EARNYIELD	3.5%	1.1%	3.08	DIVYIELD	1.8%	2.0%	0.89
MOMENTUM	4.7%	1.7%	2.76	SIZE	3.2%	4.8%	0.67
VALUE	2.9%	1.1%	2.74	MOMENTUM	0.8%	3.9%	0.21
DIVYIELD	0.9%	1.0%	0.91	EARNYIELD	0.4%	2.3%	0.18
LIQUIDITY	1.0%	1.7%	0.59	LIQUIDITY	-0.4%	4.0%	-0.10
VOLATILITY	0.8%	3.9%	0.21	VOLATILITY	-4.6%	8.7%	-0.53
LEVERAGE	-0.1%	0.8%	-0.12	VALUE	-3.9%	2.4%	-1.62
GROWTH	-0.1%	0.9%	-0.14	GROWTH	-4.2%	2.3%	-1.82
SIZE	-0.8%	2.4%	-0.32	LEVERAGE	-3.0%	1.6%	-1.92

Relationship between Size, Sector, Beta, and Liquidity

As discussed in the introduction, size covers an important dimension of liquidity, as small cap stocks tend to be more expensive to trade than large cap stocks. Nevertheless, it is clear from Table 1 that the performance of size and liquidity is sufficiently distinct in different market conditions. The exposure correlation across the two factors has varied between 0.2 and 0.5 with an average of approximately 0.3. Figure 2 illustrates the distribution of liquidity among the stocks of four indices: MSCI Europe, MSCI Europe Mid Cap, MSCI Europe Small Cap, and MSCI Emerging Markets (EM) Europe. As expected, we see that the MSCI EM Europe and MSCI Europe Small Cap Indices have the largest frequency of stocks with large negative exposures to liquidity, as Emerging Market stocks and small cap stocks are expected to be less liquid than

Developed Market large cap stocks. The liquidity exposures of stocks belonging to the MSCI EM Europe and MSCI Europe Small Cap Indices are also more dispersed. However, there is little difference in the distribution of liquidity among stocks in MSCI Europe and MSCI Europe Mid Cap Indices. Figure 3 gives further insight into the relationship between size and liquidity. We see that while relatively few small cap stocks (negative size exposure) have high turnover, large cap stocks in the estimation universe are distributed across the whole spectrum of liquidity.

Figure 2: Distribution of exposure to liquidity by MSCI Index (May 2009)

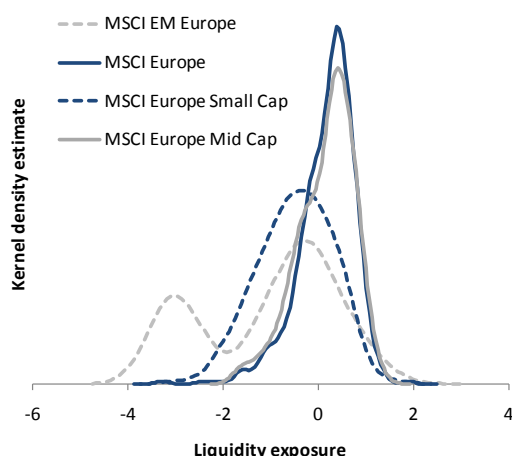


Figure 3: Relationship between size and liquidity exposure across the estimation universe (May 2009)

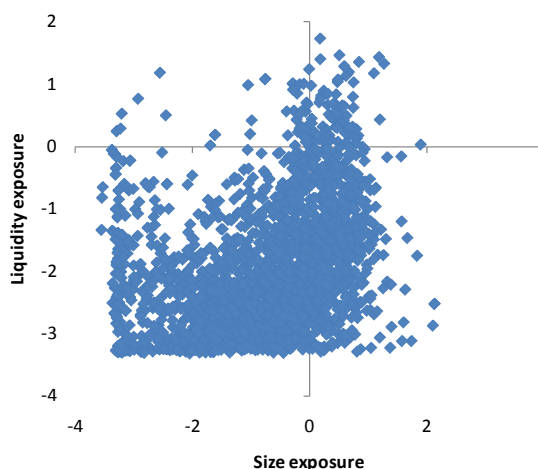


Table 2 looks at the differences in liquidity exposures in the MSCI Europe Index across stocks belonging to different Global Industry Classification Standard (GICS®) sectors. We see that different sectors have substantial differences in the liquidity characteristics of their stocks—with Information Technology, Materials and Consumer Discretionary sectors the most liquid, while Utilities and Consumer Staples are the least liquid. The less liquid sectors also have larger cross-sectional standard deviation of exposures. Typically, cyclical sectors tend to be more liquid than defensive sectors, which suggests that turnover is related to beta. Indeed, in May 2009 the exposure correlation of liquidity with the EUE3 volatility factor, which captures beta, stood at 0.43. This is slightly higher than the cross-sectional correlation with size. A possible explanation is that since high beta stocks are more volatile, they are more sensitive to portfolio re-balancing by investors.

Table 2: Cross-Sectional Characteristics of Liquidity by Sector (as of May 19, 2009)

Sector	Number of stocks	Percentage of stocks with exposure >0.2	Mean exposure	Median exposure	Cap weighted mean exposure	Standard deviation of exposure
Consumer Discretionary	72	72%	0.36	0.38	0.24	0.48
Consumer Staples	41	27%	-0.15	-0.04	-0.25	0.68
Energy	26	58%	0.16	0.29	-0.10	0.60
Financials	107	50%	0.16	0.24	0.40	0.55
Health Care	31	39%	0.04	0.09	0.04	0.47
Industrials	95	67%	0.17	0.37	0.18	0.72
Information Technology	16	75%	0.40	0.39	0.47	0.29
Materials	48	77%	0.37	0.45	0.45	0.49
Telecom Services	21	43%	0.14	0.19	0.24	0.35
Utilities	31	45%	-0.05	0.04	-0.12	0.55

Liquidity Factor Regression Significance and Market Performance

In December 2008, we noted that the significance of the Liquidity factor in the Barra Global Equity Model (GEM2) tends to be a good contemporaneous indicator of market performance. When the GEM2 Liquidity factor is significant and earns a positive return, the market tends to do extremely well (averaging 19% returns), but during times when the Liquidity factor is significant and earns a negative return, the market performs poorly (averaging -37% returns). In EUE3, we observe a similar result, illustrated in Figure 4. Going long MSCI Europe only in months when the Liquidity factor is positive and significant (t -statistic >2) would have given a cumulative return of 365% between January 1994 and May 2009, compared with 251% for MSCI Europe. Moreover, going long MSCI Europe in months when the Liquidity factor is positive and significant and going short MSCI Europe in months when it is negative and significant (t -statistic <-2) would have given a cumulative return of 852% over the same period.

As a result of this strong contemporaneous link between the significance of the Liquidity factor and market performance, we have also investigated whether the t -statistic of the Liquidity factor can be used to predict market performance one month in advance. This strategy did not prove successful—going long MSCI Europe if the Liquidity factor t -statistic was greater than 2 in the previous month resulted in a cumulative return of 161% and using a long-short strategy gave a return of 158%. Both returns were less than the cumulative return to MSCI Europe. In risk-adjusted terms, these strategies have performed similarly to MSCI Europe.

Figure 4: Market Performance During Significant Periods for EUE3 Liquidity

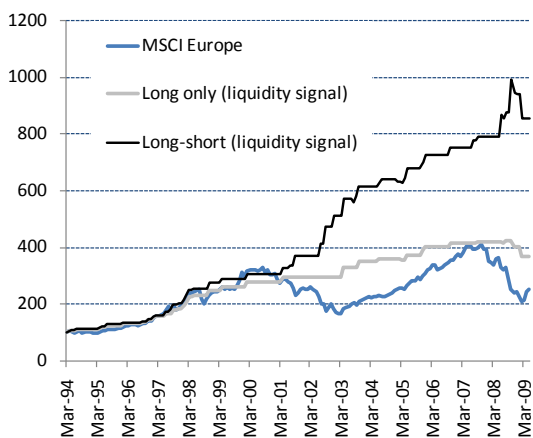
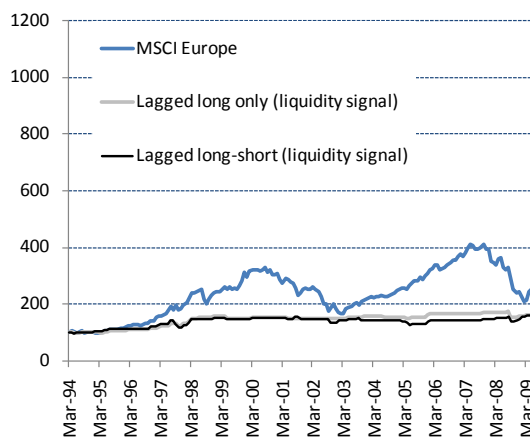


Figure 5: Market Performance when Liquidity Factor Significance is Lagged by One Month



Conclusion

In this Research Bulletin, we examined the characteristics of the Liquidity factor, which helps to assess the systematic risk associated with infrequent trading, in the new and enhanced Barra Europe Equity Model (EUE3). Specifically, we looked at the risk and return to the factor in different market environments, the link between stock liquidity and stock size and sector, and the relationship between the significance of the Liquidity factor and market performance. This factor's return varied with the market cycle during the rally of 1995-2000 and the correction of 2000-2003. In the more recent cycle, there was less dispersion between the rally and the correction. We also find that there are some systematic relationships between a company's liquidity and its size and sector. Finally, we find that the EUE3 Liquidity factor return tends to be statistically significant when the market moves up or down in a meaningful way, which is consistent with our analysis of the Liquidity factor in GEM2.

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