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Corporate Managers' Performance in a Period of Diminished Liquidity

- Street research and the press have highlighted that credit market liquidity has deteriorated since 2008. Quantitative liquidity measures, such as Barclays LCS and PIM, corroborate this. LCS and PIM are 2-3x higher, respectively, than in 2007, albeit from low levels.
- Our goal is to find out how the diminished liquidity environment has affected the performance of corporate portfolio managers.
- To that end, we measure performance of a group of large institutional investment grade credit managers in the "better liquidity" period between 2003 and 2008, and in the "worse liquidity" period between 2010 and 2014.
- The group's self-reported average monthly active returns were 6.5bp/m in the four years from June 2003 to June 2007, and 9.4bp/m in the four years from December 2010 to December 2014. However, the difference was not statistically significant. Risk-adjusted performance (IR) was worse in the second period, but not materially.
- Performance opportunities available to managers likely differed between the two periods, so a direct comparison would not be appropriate. We adjust performance to account for differences in the opportunity set defined by 10 systematic strategies. We classify some strategies as "passive" and others as "dynamic," depending on the degree of their dependence on market liquidity.
- In both periods, managers largely relied on the same passive strategies (eg, duration and credit spread duration overweight), and on roughly the same blend of passive and dynamic strategies. We find manager *adjusted* performance was slightly worse in the second period, but the drop was not statistically significant.
- However, we find that diminished liquidity seems to have affected manager performance. Unlike in the first period, active returns in the second period came mainly from passive strategies. Dynamic strategies enhanced active returns in the first period, but hurt them in the second. Besides, the heavier reliance on passive strategies increased the correlation of portfolios' returns with their benchmarks, possibly reducing their appeal to asset owners who seek better portfolio diversification.
- Not a single manager was successful in dynamic strategies in the second period. Because this sudden decline in skill was so universal, it is unlikely to be explained by transient fluctuations in individual managers' skill. It may indeed stem from the diminished market liquidity.

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The deterioration of the USD corporate bond market liquidity since 2008 continues to be the subject of active discussions. We know from consultation with investors that most of them believe today's liquidity conditions are worse than those prior to 2008.[1]

Barclays' bond-level bid-ask spread-based liquidity metrics, Liquidity Cost Score (LCS) and Price Impact Measure (PIM) indicate that liquidity has worsened since 2007 (Figure 1)[2]. The LCS for IG Credit has increased from 0.355% in January 2007 to 0.688% in July 2016, while PIM has increased from 0.013% to 0.046%. However, while the deterioration in corporate liquidity is large in percentage terms given the very good liquidity of the 2007 period, Figure 1 shows that the magnitude of deterioration is more modest, perhaps arguing against the considerable attention paid to it by the Street and press.

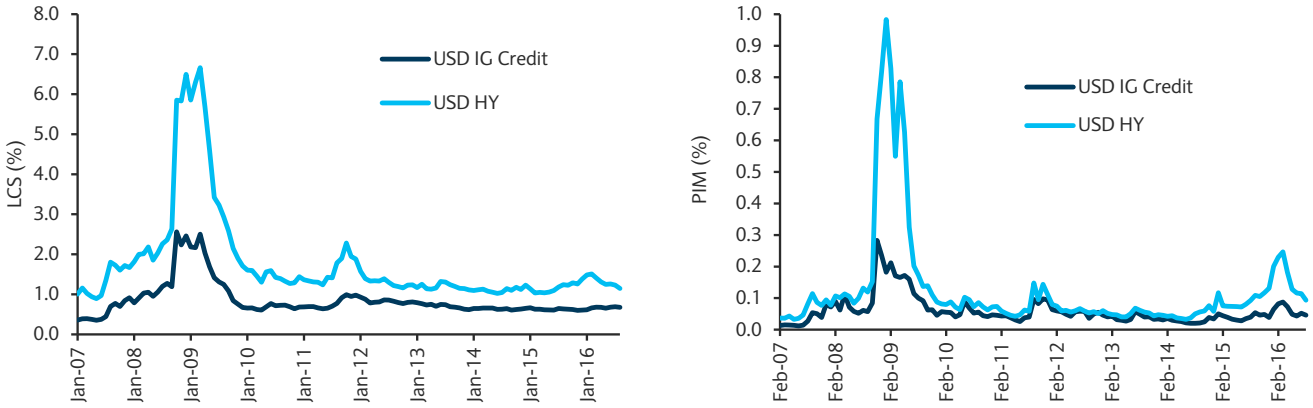
Researchers continue to probe deeper into the available transactions data, searching for other signs of market liquidity deterioration. Recent findings of reduced trading volume per amount outstanding, fewer block trades, and increased percentage of agency trades do suggest that market liquidity has deteriorated (at least in the form of "immediacy" traditionally provided by broker/dealers).[3] Some also argue that using trading data to measure liquidity may never properly reflect today's worse liquidity environment simply because portfolio managers are apprehensive about possible difficulties of entering or exiting trades. The magnitude of potential profit thus forfeited is difficult to measure.

These trends, however, do allow other explanations, not directly related to a deterioration in corporate market liquidity. For example, both the rapid growth of passive fixed income investing and reduced volatility could account for the reduced demand for immediacy and the increased proportion of agency trades. Also, in an era of low absolute returns, managers are increasingly cost-conscious and might be expected to employ such strategies (eg, internal netting) that avoid the cost of transacting at dealer bid/ask prices.[4]

We enter this discussion on liquidity from a different angle. Liquidity (ie, immediacy provided by broker/dealers) is a service with a cost, and this cost has increased. We should expect PMs to adjust to the higher cost. How have they done so? In particular, how have today's wider bid-ask spreads and higher price impact affected the active returns that PMs have delivered to asset owners?

FIGURE 1

USD Credit Index: LCS and PIM, January 2007 – August 2016



Source: Barclays Research

[1] Polling results from the 2015 Barclays EQRAC Conference: 66% of institutional fixed-income managers consider pre-2008 to be a period of better corporate market liquidity.
[2] *Konstantinovsky, V., K. Y. Ng, and B. Phelps, "Measuring Bond-Level Liquidity: Liquidity Cost Scores (LCS)", Barclays Research, 24 July 2015*, and *Konstantinovsky, V., K. Y. Ng, and B. Phelps, "A Price Impact Measure of Corporate Bond Liquidity (PIM)", Barclays Research, 19 October 2015*.
[3] *Meli J. and S. Gupta, "Behavior Modification", Barclays Research, 10 June 2016*.
[4] Based on Daily LCS, the quoted bid-ask spread for the most-actively traded investment-grade bonds, a corporate portfolio manager who has annual turnover of 100% might pay upwards of 5bp/m in bid-ask cost.

We propose to directly assess the impact of the change in corporate market liquidity on manager performance. Wider bid-ask spreads, higher price impact, a reduced ability to trade block amounts, the need to hold larger cash buffers for redemptions, and a shying away from potentially profitable trades might be expected to reduce credit manager active returns in recent years compared with pre-2008. Is this the case?

To find out, we collected eVestment Alliance monthly performance data (gross of fees) for 27 active institutional investment-grade credit managers with an average AUM of $17.4bn. These data represent their self-reported representative "composite" institutional portfolio returns. All these asset managers are longstanding names in the institutional asset management industry, so survivorship bias is unlikely to be an issue.[5]

We split the data sample into two four-year (49 months) periods. Four years are sufficient for managers to adequately demonstrate their performance. We select the two periods to match the investors' perception of better and worse corporate market liquidity, respectively. The two periods are similar in terms of the overall market performance. We define them as follows:

"Better Liquidity Period": June 2003 – June 2007

"Worse Liquidity Period": December 2010 – December 2014

It is virtually impossible to find two periods with identical market performance characteristics but different liquidity. However, we come close. The two selected periods exhibited strong corporate bond performance, both in terms of total returns and excess returns. For example, A-rated OAS fell 21bp from 110bp to 89bp between June 2003 and June 2007; the decline between December 2010 and December 2014 was 41bp, from 150bp to 109bp.

This is illustrated in Figure 2. Average monthly index total returns were 26bp/m in the first period and 44bp/m in the second, while the standard deviation of total returns was 136bp/m and 116bp/m, respectively. In terms of excess returns, the Credit index performance was better in the second period (14bp/m compared with 8bp/m), but the volatility of excess returns was considerably higher (100bp/m compared to 26bp/m). Excess return volatility in the second period was higher than would have been expected even allowing for the higher level of spreads in the second period compared with the first.[6]

FIGURE 2

USD Credit Index Performance; Two Periods

	Credit Index Average Monthly Total Return (%)	Credit Index Monthly Total Return Volatility (%)	Credit Index Average Monthly Excess Return (%)	Credit Index Monthly Excess Return Volatility (%)
Jun 2003 – Jun 2007	0.26	1.36	0.08	0.26
Dec 2010 – Dec 2014	0.44	1.16	0.14	1.00

Source: Barclays Research

[5] Two firms had two funds each in the dataset, but they professed to follow different credit management strategies.
[6] A decrease in index total return volatility accompanied by an increase in excess return volatility reflects the higher negative correlation between Treasury returns and comparable key-rate duration corporate excess returns (-0.05 in the first period vs. -0.46 in the second).

Manager-Reported Performance in the Two Liquidity Periods

We compute managers' active return using their self-declared benchmark, and define it as:

manager active return =

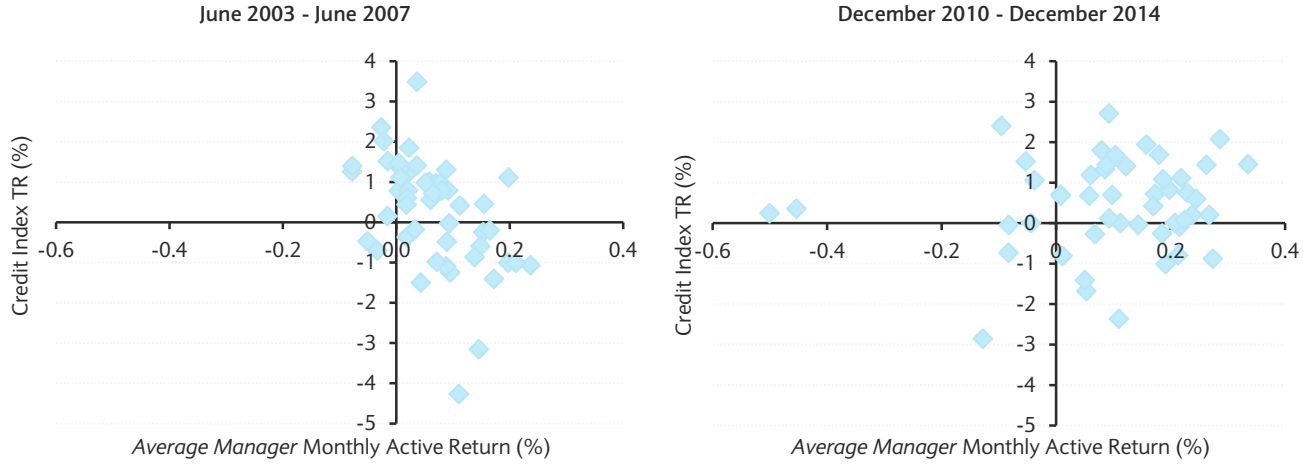
manager monthly total return (gross of fees) – benchmark (ie, index) total return

We use the same set of managers in both periods. Of the 27 managers, 20 identified their benchmark as the Bloomberg Barclays USD Credit index, while seven had the Bloomberg Barclays USD Credit Corporate index. In terms of monthly active returns, this is a diverse group. The average pair-wise correlation of manager monthly active returns was 0.13 in the first period and 0.22 in the second. The low average pair-wise correlation in manager active returns suggests that there was diversification, at least at the monthly level, in strategies deployed and/or differences in skill levels.

We begin by examining the monthly active returns of the *average manager* which is the simple arithmetic average of monthly active return of all managers.[7] Figure 3 shows *average manager* monthly active returns (gross of fees) versus the Credit index monthly total return, for both periods. Figure 4 provides summary statistics.

FIGURE 3

***Average Manager* Active Returns; Two Periods**



Source: Barclays Research

FIGURE 4

***Average Manager* Active Returns, Mean and Standard Deviation; Two Periods**

	Average Manager's Monthy Average Active Return (%/m)	*Average Manager's* Volatility of Monthy Active Returns (%)
Jun 03 - Jun 07	0.06	0.08
Dec 10 - Dec 14	0.09	0.16

Source: Barclays Research

[7] The *average manager* is a hypothetical entity – An average of all managers.

The *average manager's* active return increased from 6.5bp/m in the first period to 9.4bp/m in the second. As shown in Figure 3, there were two months (August and September 2011) in the second period in which the *average manager* performed particularly poorly. While the *average manager's* active return increased in the second period, so did its standard deviation (from 8bp/m to 16bp/m). Also, although *average manager* performance improved in the second period, the improvement was not statistically significant.[8]

Based on the level of Credit index excess return volatility, we can estimate the *average manager's* skill using the Grinold-Kahn relationship: monthly average active return = skill × √12 × Credit index Ex Ret monthly volatility.[9] Skill, in this sense, represents the ability of the manager to take views correlated with subsequent market realizations. In other words, skill is an ability to translate volatility into active returns. For the first period, the *average manager's* skill was 0.07, while for the second it was a lower 0.03.

In addition, on a risk-adjusted basis (annualized IR = √12 × average active return ÷ standard deviation of active returns), the *average manager's* IR declined from 2.98 in the first period to 2.00 in the second.[10]

Overall, at least from the perspective of the *average manager*, while average active returns increased in the worse-liquidity period relative to the better-liquidity period, skill and risk-adjusted returns actually decreased. However, there is no indication that the *average manager* struggled during the period of worse liquidity. Plan sponsors should have been reasonably pleased with their managers' performance.

At the *individual manager* level, Figures 5 and 6 show that there was an increase in dispersion of a manager's monthly active returns: going from a standard deviation of 18bp/m (an average standard deviation for all individual managers) in the first period to 30bp/m in the second. In addition, the standard deviation (dispersion) of average active returns across managers increased only modestly from 5bp/m to 6bp/m. To summarize, taken as a whole, managers performed better in the second period, albeit with a higher volatility of monthly active returns. The average performance differentiation across managers was roughly the same.

FIGURE 5
Individual Manager Active Return Volatility; Two Periods

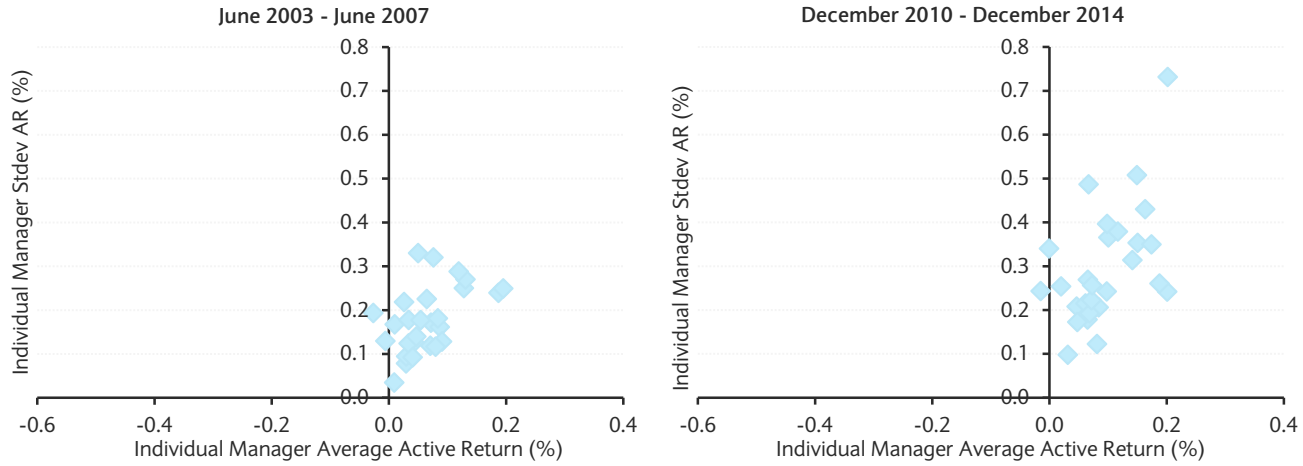
	Manager Monthly Active Return Volatility (%) (average across managers)	Standard Deviation of Average Active Returns across Managers (%)
Jun 03 - Jun 07	0.18	0.05
Dec 10 - Dec 14	0.30	0.06

Source: Barclays Research

In the first period, 25 out of 27 managers generated positive average active returns. This was also the case for the second period. In addition, the worst and best individual manager's average performance were roughly the same in both periods (-3bp/m, -2bp/m) and (19bp/m, 20bp/m), respectively. In other words, the cross-sectional dispersion of average monthly returns across managers was similar between the two periods. The small change in performance dispersion across managers is somewhat unexpected given the overall increase in index excess return volatility. This seems to suggest that managers followed broadly similar strategies and demonstrated similar skill despite relatively low average pair-wise correlation of manager active returns at the monthly level.

[8] We conduct a difference of means test and allow for the possibility that the variances of the two periods' populations are different. The estimated t-statistic under the null hypothesis of no difference in average active returns was 1.14.
[9] *Active Portfolio Management*, 2nd edition, McGraw-Hill, 2000.
[10] Typically, the *average manager's* IR is elevated compared with an individual manager's IR because of the diversification benefit of averaging active returns across many managers.

FIGURE 6
Individual Manager Average Active Returns; Two Periods

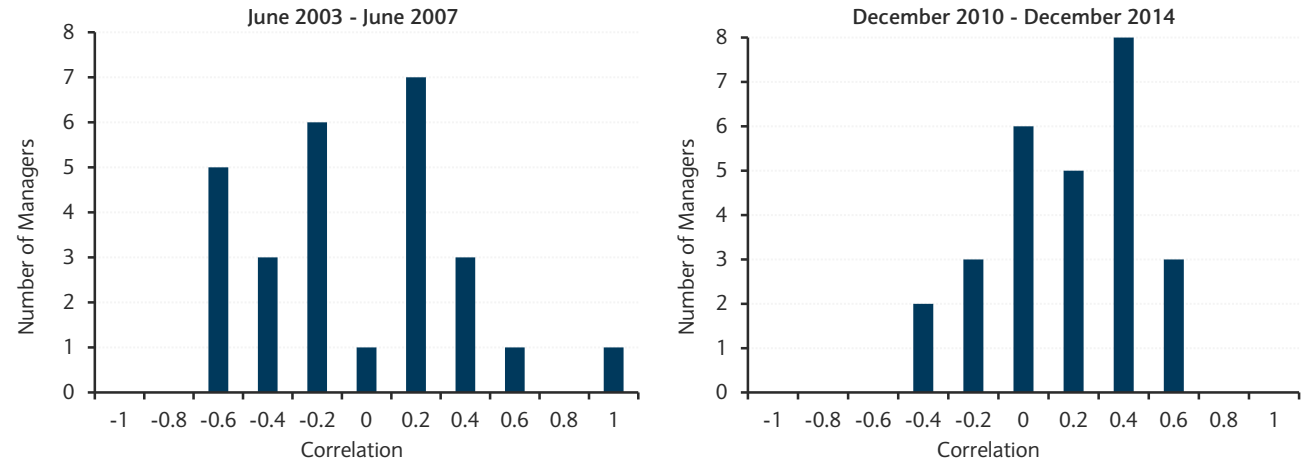


Note: Gross of fees. Source: Barclays Research

The average annualized information ratio across all the managers decreased from 1.26 in the first period to 1.15 in the second, indicating modest deterioration in risk-adjusted performance despite the increase in the reported average active return.

Asset owners usually prefer their manager's active return to be uncorrelated with their benchmark return. An uncorrelated active return increases the diversification of the asset owner's overall portfolio and usually improves the risk-adjusted performance. For the first period, manager active return correlations with their benchmarks centered on zero (average correlation = 0.06, see Figure 7). However, in the second period, we see a shift of the distribution to more positive territory (average = 0.16), suggesting that managers relied more on strategies correlated with their benchmark's total returns.[11] As we show in more detail later, it is possible that the more limited liquidity of the second period forced active managers to rely on more passive, long-exposure strategies, making even positive active returns less attractive to the asset owners because of reduced diversification.

FIGURE 7
Correlation of Manager's Monthly Active Returns with Benchmark Monthly Total Returns; Two Periods



Source: Barclays Research

[11] Correlations of manager active returns with their benchmark's excess returns also increased from an average of 0.15 in the first period to 0.33 in the second.

The average (Pearson) correlation of individual manager average active return between the two periods is 0.59 (IR correlation is 0.49), suggesting that an above-average manager in the first period was likely to be an above-average manager in the second.

If indeed the second period was much less liquid – and liquidity is important for active return performance – it is noteworthy that corporate managers' active returns held up so well in the second period. Managers seemed to have adapted well. However, there are signs of stress. Individual manager risk-adjusted returns declined, and managers' returns became somewhat more correlated with their benchmark's total return, suggesting the use of more passive strategies that rely less on market liquidity.

Adjusting Manager Active Returns for the Available Opportunity Set

A skillful manager should be able to transform volatility (and carry) into positive active returns, although there is no guarantee of success. As a first step to making a manager's performance comparable between the two periods, we adjust for potentially different "performance opportunity sets" available in each. One period might have offered a poorer opportunity set (eg, lower credit excess return volatility, flatter spread curves, and fewer new issues). Perhaps managers did better during the second period because it had a richer opportunity set. So, we adjust active return to take into account the change in the available opportunity set, and then compare how the *adjusted* performance changed between the two periods.

The idea is as follows: We decompose a manager's active return into systematic and non-systematic components. To do so, we regress each manager's monthly active returns on a set of **systematic performance factors**[12] and use the regression intercept as the measure of the manager's adjusted (or, non-systematic) performance ("AdjPerf"). We break down each manager's (*j* subscript) monthly active return as follows:

$$\textbf{Manager Active Return}_{j,t} = \textbf{Manager AdjPerf}_{j,t} + \textbf{Manager Systematic\_Perf}_{j,t} + \varepsilon_{j,t}$$

Assuming constant skill, the systematic component of active return is influenced by the availability of a performance factor in the period.

A manager's adjusted performance reflects those non-systematic components of returns. These could be such active return sources as traditional relative value trades, "out-of-benchmark" positions, dynamic trading within a month or day, and any other trade ideas unique to the manager. We compare a manager's adjusted return between the periods to exclude the component of active return that comes from exposure to systematic performance factors that may differ between the two periods. So did adjusted returns deteriorate in the second period?

For example, suppose a manager reports 8bp/m of average active returns in both periods. However, we estimate that this active return was positively related to credit excess returns, suggesting a persistent long exposure to credit excess returns (a systematic factor). Further, we estimate that in the first period, the manager earned 6bp/m of active return from this systematic factor, but only 3bp/m in the second. The manager's adjusted return in the first period was 2bp/m, but 5bp/m in the second, suggesting that the adjusted performance actually improved.

Besides using AdjPerf as a fairer comparison of manager performance, we can also look for changes in the managers' selection of systematic strategies between the two periods. For example, did managers make more use of passive strategies and less use of dynamic

[12] These are not factors in the sense of a factor model (à la the familiar Fama-French factors for equities) that tries to identify a small set of variables (*eg,* value and growth) that account for most of the common variation in asset returns.

strategies in the second period? We break down a manager's monthly active return into three components as follows:

$$\text{Active Return}_{j,t} = \text{AdjPerf}_{j,t} + \text{Passive Systematic\_Perf}_{j,t} + \text{Dynamic Systematic\_Perf}_{j,t} + \varepsilon_{j,t}$$

This lets us detect a change in a manager's ability to generate active return from a given type of systematic strategy. Such a change in ability may just be random fluctuation (no one has positive skill all the time), or it may reflect different market liquidity. How can we differentiate? We argue that a simultaneous loss in skill across many managers probably reflects a change in the market environment and is less likely to be a function of random fluctuations in skill.

To proceed, we first identify systematic strategies that we believe a skilled credit manager might follow to generate active returns. Then, we identify a performance factor related to each strategy. For example, a persistent overweight/underweight to credit can be considered a passive systematic performance factor and can be measured by Credit index excess returns.

As another example, some managers may follow a dynamic credit market timing strategy, overweighting credit when credit excess returns are anticipated to be positive and underweighting when they are expected to be negative. Perhaps a manager has an algorithm or "scorecard" that identifies in which months to go long and in which to go short. A performance factor that captures this strategy is the absolute value of the monthly Credit index excess returns.[13] If a manager is successful in timing credit excess returns, then active returns tend to be positive whether the Credit index excess return for the month is positive or negative, because a skillful manager would know when to extend and when to shorten credit spread duration. Furthermore, the positive magnitude of active returns would be correlated with the magnitude of monthly credit index excess returns irrespective of whether they were positive or negative.

If the second period offered more opportunities for credit market timing than the first, ie, it had a larger average |Credit Ex Ret|, then a skillful manager had a greater opportunity to earn positive active returns. If successful, a meaningful component of the manager's active return would come from this dynamic systematic performance factor.

Presented below are 10 systematic strategies and their associated performance factors, which a credit portfolio manager might use to generate active returns. We divide these into two categories: passive-type strategies that simply require maintaining a persistent exposure over time and more dynamic-type strategies that would likely require regular trading to adjust factor exposures. It seems reasonable to assume that the two types have different needs for trading and liquidity, so may be affected differently by changes in the liquidity environment.

Passive Strategies

1. Persistent duration exposure ("Duration"): **Monthly Change in the 10y UST Yield**

Treasury yields have been declining for as long as most of today's investment managers can remember, so some of them choose to engage in a persistent long (or short)-duration strategy to increase returns. Hence, we control for (the negative of) trends in changes in 10y Treasury yields, which are the performance factor for this strategy. If a manager is persistently long duration and rates decline (or short duration and rates increase), then this

[13] Using absolute value of excess returns is similar to the classical Treynor and Mazuy use of quadratic returns to measure a manager's timing ability. See "Can Mutual Funds Outguess the Market", Harvard Business School, 1966. The correlation between Credit ExRet and |Credit ExRet| is typically low.

factor's loading is positive. This is a passive strategy, as it requires relatively little trading.

2. Persistent credit spread duration exposure ("Cred_Spr"): **Monthly Corp ExRet**

As an outperformance strategy, managers may choose to overweight (or underweight) credit exposure persistently and be long (short) spread duration. Consequently, we define monthly Credit index excess returns as the performance factor for this strategy. This is a passive strategy to capture a trend in credit spreads. We expect active returns of a skillful manager to load positively on this factor.

3. Persistent quality spread exposure ("Qual_Spr"): **Monthly Excess Return Difference between Baa_Intermediate Index and A_Intermediate Index**

Managers may choose to overweight (underweight) lower quality bonds persistently as an outperformance strategy.[14] We define the Qual_Spr performance factor as the difference between monthly excess returns of the Intermediate Baa Index and those of the Intermediate A Index. A persistent quality spread exposure is a passive performance strategy.

4. Harvesting new issue concessions ("New_Issue"): **New Issue (MV)/Index(MV), a Measure of New Issue Activity**

Managers can try to outperform by capturing new-issue "concession". Consequently, we might expect active returns to fluctuate as new issue volume fluctuates. In months with large new issuance, a manager's active returns may be higher. We use the market value amount of new issues in a month, as a percentage of index total market value, as the performance factor. Harvesting new issue concessions is considered a passive performance strategy, as managers roll from an existing bond to a new issue, facilitated by the underwriting broker/dealer.

5. Persistent overweight to off-the-run bonds ("On_Off_Spr"): **Monthly Excess Return Difference between Off_the_Run Index and On_the_Run Index**

Finally, some managers may choose to overweight (underweight) off-the-run bonds that may trade at a wider spread compared to on-the-run bonds. We define this factor as the excess return of the "off-the-run" index (ie, bonds in the Baa Credit Index with remaining maturity of 9-11y issued more than 1y ago) less the excess return of the "on-the-run" index (the same 9-11y cohort but issued less than 1y ago). This is a passive strategy to capture trends in a liquidity premium, and a manager following this strategy is expected to load positively on this factor.

Dynamic Strategies

1. Credit spread timing ("Cred_Spr_Timing"): **Monthly |Corp ExRet|**

When next-month Credit index excess returns are expected to be positive, a skillful manager overweights credit spread duration, and vice versa. So irrespective of the sign of monthly Credit index excess returns, a (successful) manager generates a positive active return. As such timing opportunities may be more prevalent in one period than in another, we must control a manager's active return for its loadings on |Corp ExRet|. To load positively on such a performance factor requires active, and not too expensive, trading.

2. Timing changes in market volatility ("Chg_Vol"): **Monthly |chg_VIX|**

[14] In fact, we find that overweighting high spread, low duration bonds is a significant outperformance strategy. See *Ng, K. Y. and B. Phelps, "Structure of US Corporate Excess Returns: The Hunt for a 'Low-Risk' Anomaly", Barclays Research, 5 May 2014*.

Swings in equity market volatility (VIX) may offer more credit active return opportunities. As the market ebbs and flows between "risk on" and "risk off", a skillful manager should be able to convert these changes into positive active returns irrespective of the direction of VIX changes. So we control for fluctuations in VIX between the two periods when estimating a manager's adjusted active return. We use the absolute value of monthly changes in the VIX futures prices. This strategy also requires an ability to trade actively and at a reasonable cost.

3. Treasury duration timing ("Chg_Yld_Timing"): **Monthly |chg_10y UST yield|**

Perhaps the manager is skillful at timing interest rate changes (ie, changes in the 10y UST yield). When chg_10y UST yield is positive, the manager is underweight duration versus the index, and vice versa. So irrespective of the sign of chg_10y (which is why this factor is expressed in absolute value), the manager is able to generate a positive active return. Such opportunities may be more prevalent in one period than in another. For example, one period may offer larger yield changes, giving a skillful manager a better opportunity to use duration timing to boost active returns. So in our model specification, we control a manager's active return for |chg_10y UST yield|. To load positively on this performance factor requires an ability to trade actively, at a reasonable cost.

4. Security selection ("CSIdio_Vol"): **Cross-sectional Idiosyncratic Excess Return Volatility**

Higher bond-level idiosyncratic risk offers skillful managers an opportunity to boost active returns. To measure the level of idiosyncratic volatility in the corporate market, we compute bond-level idiosyncratic excess returns defined as a bond's monthly total return less the return due to its loading on its Treasury key rate exposures and sector exposure. We then calculate the monthly cross-sectional standard deviation of idiosyncratic excess returns across all bonds each month.[15] CSIdio_Vol is our performance factor for the opportunity to generate positive active returns via skillful security selection. Skillful managers should perform better in an environment of higher cross-sectional idiosyncratic volatility, so we expect active returns to load positively on this predictor variable. Security selection strategy requires an ability to trade actively, at a reasonable cost.

5. Sector selection ("Sect_ER_Vol"): **Cross-sectional Sector Excess Return Volatility**

For managers who focus on sector-level strategies, market environments with higher cross-sectional sector volatility offer an opportunity to increase active returns. Using 10 sectors, and defining a duration range of 3-7, we compute the monthly contemporaneous cross-sectional volatility of sector excess returns. This is the performance factor for sector selection. We expect active returns to load positively on this factor. As with security selection, a sector selection strategy requires active trading.

Figure 8 summarizes the 10 performance strategies and their classification into passive and dynamic.

FIGURE 8
Classification of 10 Performance Strategies: Passive and Dynamic

Passive Strategies	Dynamic Strategies
Duration	Cred_Spr_Timing
Cred_Spr	Chg_Vol
Qual_Spr	Chg_Yld Timing
New_Issue	Idio_ER_Vol
On_Off_Spr	Sect_ER_Vol

Source: Barclays Research

[15] See Ng, K. Y., N. Schuehle and B. Phelps, "Corporate Idiosyncratic Risk and Returns", Barclays Research, June 2014.

Figure 9 shows the mean and standard deviation for each of the 10 performance factors in the two periods.[16]

FIGURE 9

Mean and Standard Deviation of 10 Performance Factors; Two Periods

	Passive Strategies					Dynamic Strategies				
	Duration	Cred Spr	Qual Spr	New Issues	On-Off Spr	Cred Spr Timing	Chg Vol	Chg Yld Timing	CS Idio ER Vol	Sect ER Vol
	yld chg; bp/m	ExRet; bp/m	ExRet; bp/m	% index MV per month	ExRet; bp/m	|ExRet|; bp/m	ann. vol; %	|yld chg|; bp/m	ExRet vol; bp/m	ExRet vol; bp/m
Jun 03 – Jun 07										
mean	0.03	0.08	0.05	1.38	0.03	0.22	1.59	0.19	0.62	0.18
stdev	0.26	0.26	0.21	0.41	0.22	0.16	1.47	0.17	0.20	0.13
Dec 10 – Dec 14										
mean	-0.01	0.14	0.03	1.54	0.08	0.73	3.14	0.17	1.00	0.27
stdev	0.22	1.00	0.23	0.52	0.38	0.69	2.81	0.13	0.38	0.19

Source: Barclays Research

We see some noticeable changes in the behavior of the performance factors between the two periods. In fact, seven of the performance factors had higher means in the second period, offering skillful managers better opportunities to increase active returns. For example, managers following a persistent credit spread overweight would be expected to perform better in the second period because monthly excess returns increased from 8bp/m to 14bp/m. Similarly, the magnitude of average absolute changes in monthly |Corp ExRet|, the credit market timing factor, increased significantly in the second period (to 73bp/m from 22bp/m), enabling managers who use credit market timing to boost active returns. So it may not be a surprise that reported manager active returns were higher in the second period – irrespective of any changes in the liquidity environment – as there were more performance opportunities.

Figure 10 shows the correlation matrix for these 10 performance factors, separately for the two liquidity periods. Most correlations are quite low. The exceptions are Qual_Spr and Cred_Spr in the first period, and and CSIdio_ER_Vol and Sector_ER_Vol as well as CSIdio/Sect_ER_Vol and Cred_Spr_Timing in the second period.

Manager Adjusted Active Returns in the Two Liquidity Periods

We recognize that managers differ in strategy preferences and skill levels. In addition, a manager may choose different exposures in each of the two periods. Consequently, we estimate a different active return performance model for each manager, for each period.

[16] Figure 9 shows the average and standard deviation for each strategy's monthly realization. However, not all strategies are available to the manager each month. For example, New_Issues (measured as new issue MV/index MV) may be zero in some months. Also, the dynamic strategies (eg, Cred_Spr_Timing) appear to have very high information ratios (ie, high return/low vol). However, this assumes that the manager has perfect foresight and is correctly positioned each month, which is unlikely.

FIGURE 10
Correlations of Performance Factors; Two Periods

Jun 03 – Jun 07	Passive Strategies					Dynamic Strategies				
Dec 10 – Dec 14	Duration	Cred Spr	Qual Spr	New Issues	On-Off Spr	Cred Spr Timing	Chg Vol	Chg Yld Timing	CS Idio ER Vol	Sect ER Vol
Duration		*0.04*	*0.30*	*-0.06*	*-0.06*	*0.04*	*-0.14*	*0.50*	*0.09*	*0.08*
Cred Spr	0.45		*0.83*	*0.02*	*-0.07*	*-0.18*	*-0.06*	*0.08*	*-0.13*	*-0.52*
Qual Spr	0.20	0.28		*0.10*	*-0.13*	*-0.23*	*-0.09*	*0.17*	*-0.14*	*-0.51*
New Issues	0.01	-0.09	0.11		*-0.14*	*-0.07*	*0.17*	*-0.19*	*-0.24*	*-0.31*
On-Off Spr	-0.38	-0.33	0.19	0.24		*0.02*	*0.01*	*0.01*	*0.21*	*0.03*
Cred Spr Timing	-0.13	-0.19	-0.09	-0.09	0.06		*0.13*	*0.03*	*0.28*	*0.50*
Chg Vol	-0.17	-0.06	-0.23	-0.14	-0.12	0.43		*0.00*	*-0.02*	*-0.03*
Chg Yld Timing	-0.07	-0.32	-0.22	-0.06	-0.11	0.31	0.34		*0.28*	*0.18*
CS Idio ER Vol	-0.16	-0.18	-0.10	0.04	-0.09	0.86	0.49	0.23		*0.58*
Sect ER Vol	-0.21	-0.20	-0.29	0.00	-0.01	0.86	0.48	0.22	0.88	

Note: Upper right triangle (red) is for June 2003 to June 2007. Lower left triangle (black) is for December 2010 to December 2014. Source: Barclays Research

Given the likelihood of multicollinearity among some of the performance factors (Figure 10), we employ a forward variable selection regression method to identify the significant performance factors for each manager, in each period. We first identify the single most significant factor explaining the manager's active return, either positively or negatively. Then, we examine each of the remaining factors, in turn, to identify the next factor that best explains variation in the manager's performance – after accounting for the first factor. The second factor (if any) that most exceeded our t-statistic threshold (≥ |2.02|) is added to the model. We proceed in this fashion until all potential factors are considered.[17]

As an example, for manager #7 ("Mgr7") in the first period, we have the following final regression specification:

$$\text{Monthly } AR_{7,t} = \text{AdjPerf}_7 + \beta_{7,\,\text{Cred\_Spr}} \times \text{Cred\_Spr}_t + \varepsilon_{7,t}$$

Mgr7's average reported monthly active return was 18.7bp/m in the first period. However, the manager's AdjPerf, after removing the influence of the systematic performance factors – in this case being long credit spread duration during a period of positive credit excess returns – was estimated to be a bit lower at 14.5bp/m and was statistically significant.

In the second period, Mgr7 had the following final regression specification:

$$\text{Monthly } AR_{7,t} = \text{AdjPerf}_7 + \beta_{7,\,\text{Cred\_Spr}} \times \text{Cred\_Spr}_t + \beta_{7,\,\text{Qual\_Spr}} \times \text{Qual\_Spr}_t + \varepsilon_{7,t}$$

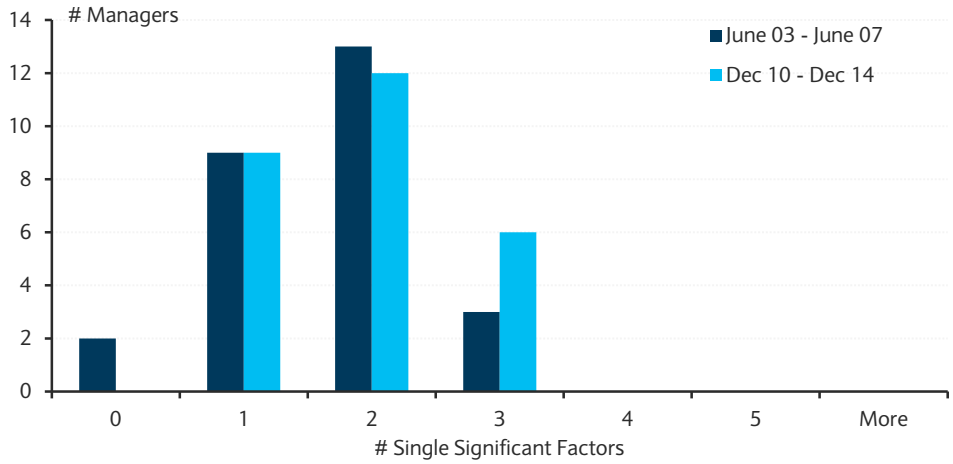
In this period, Mgr7's average monthly active return was 16.3bp/m, approximately 2.4bp/m lower than in the first period. However, the manager's AdjPerf for the second period was estimated to be 10.9bp/m, or 3.6bp/m lower than in the first period. The manager loaded positively on Cred_Spr (ie, had a credit spread overweight during a period of strong credit excess returns), and loaded positively on Qual_Spr (ie, an overweight to lower-rated bonds that performed better than higher-rated ones). So, net of the influence of the (passive) systematic factors that contributed to the manager's active return, Mgr7 performed worse in the second period.

Figure 11 shows that a typical manager had only a small number of significant single systematic factors (either positive or negative) in either period. For example, in the first and second periods, nine managers (out of 27) had just one significant single performance factor. No manager's active returns loaded significantly on more than three performance factors. Also, almost all managers in both periods loaded on at least one factor. The exception was that two managers in the first period did not load on any performance factor.

[17] We find that the adj-R^2s of the regression for the final model are close to those if all performance factors were used as explanatory variables.

FIGURE 11

Number of Significant Single Performance Factors, per Manager, Two Periods



Source: Barclays Research

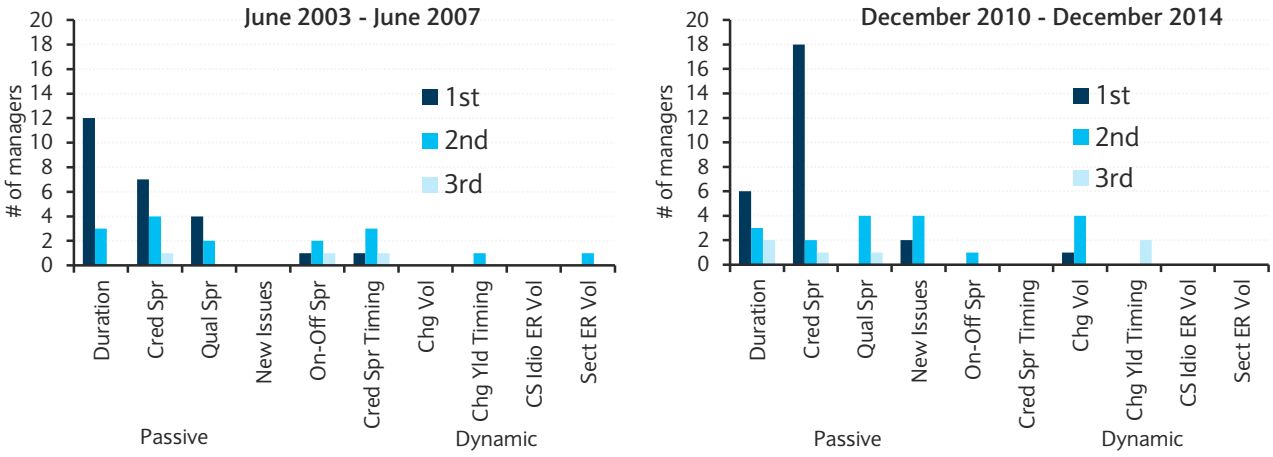
Figure 12 shows the relative importance of the factor loadings across managers for each period. The "1st" factor is the one that explains the most of the variation in a manager's active returns, followed by the "2nd" factor (if any) and a "3rd" (if any). In both periods, the Duration and Cred_Spr factors had the most explanatory power for manager active returns. In the first period, 12 of the 27 managers had Duration as their most significant systematic factor driving their active returns, followed by seven who had Cred_Spr as their most significant factor. In the second period, 18 of the 27 managers had Cred_Spr as the most significant factor, followed by six with Duration.

In both periods, the dynamic factors had low explanatory power. Only two managers (one with Cred_Spr_Timing in the first period and one with Chg_Vol in the second period) had a dynamic factor as the primary significant explanatory factor for their active returns. A handful of managers across both periods had a dynamic factor as their second most significant explanatory factor.

Overall, Figure 12 shows that for both periods, the passive factors are the systematic factors that help explain active returns. All the dynamic factors feature much less prominently as explanatory variables.

FIGURE 12

Relative Importance of Performance Factors, Across Managers, Two Periods



Source: Barclays Research

For each of the 27 managers, Figure 13 compares AdjPerf between the two periods. The average model fit for a given manager was roughly the same in the two periods: R^2 = 42% and 50%, respectively.

FIGURE 13

Manager Active Returns and AdjPerf; Two Periods

	"Better Liquidity" Period				"Worse Liquidity" Period			
Manager ID	ActiveRet (%)	AdjPerf (%)	t-stat (AdjPerf)	R^2	ActiveRet (%)	AdjPerf (%)	t-stat (AdjPerf)	R^2
1	0.03	0.06	4.89	0.86	0.10	0.08	2.91	0.71
2	0.04	0.05	2.36	0.55	0.06	0.06	3.00	0.44
3	0.01	0.02	1.13	0.32	0.05	0.03	1.59	0.50
4	0.01	0.00	1.01	0.36	0.03	0.04	3.26	0.31
5	0.03	-0.01	-0.49	0.25	0.08	0.08	5.71	0.30
6	-0.03	-0.03			0.00	0.02	0.49	0.22
7	0.19	0.14	4.85	0.32	0.16	0.11	2.35	0.48
8	0.03	0.03	2.75	0.17	0.05	0.05	2.31	0.39
9	0.07	0.00	0.11	0.29	0.15	-0.12	-0.92	0.49
10	0.06	-0.08	-2.04	0.52	0.02	-0.22	-2.08	0.21
11	0.13	0.10	4.02	0.49	0.14	0.20	4.17	0.51
12	0.19	0.16	5.49	0.44	0.20	0.26	7.87	0.63
13	0.03	0.05	2.24	0.25	0.12	0.08	2.27	0.60
14	0.13	0.08	3.58	0.73	0.07	0.06	1.31	0.63
15	0.12	0.08	2.99	0.64	0.10	0.05	2.38	0.85
16	0.05	0.06	2.78	0.19	0.15	-0.44	-2.37	0.37
17	0.09	0.06	2.90	0.38	0.19	0.17	4.98	0.17
18	0.07	0.06	4.03	0.15	0.10	0.16	4.52	0.55
19	0.09	0.02	1.09	0.42	0.08	0.07	4.89	0.78
20	0.03	-0.04	-1.34	0.24	-0.02	-0.02	-0.73	0.25
21	0.05	0.05			0.06	-0.22	-2.96	0.45
22	0.08	0.02	0.68	0.59	0.07	0.04	1.60	0.55
23	-0.01	-0.02	-0.94	0.62	0.07	-0.04	-0.56	0.38
24	0.08	0.05	4.10	0.50	0.07	0.04	2.92	0.79
25	0.05	0.02	0.53	0.54	0.17	0.07	0.49	0.51
26	0.04	0.03	2.27	0.15	0.07	0.04	2.03	0.69
27	0.08	0.04	2.25	0.49	0.20	0.12	2.85	0.84
avg	0.06	0.04		0.42	0.09	0.03		0.50
stdev	0.05	0.05			0.06	0.14		

Note: If a manager did not load on any systematic factor, then AdjPerf will be the same as the active return. Source: Barclays Research

Although *average manager* active returns increased in the second period (Figure 4), the *average manager* AdjPerf decreased, from 3.9bp/m to 2.9bp/m – a loss of 1bp/m in AdjPerf. However, this deterioration in *average manager* AdjPerf was not statistically significant (t-statistic = -0.13). Nevertheless. AdjPerf appeared to weaken. In the first period, 24 of the 27 managers had statistically significant positive adjusted returns, vs. 16 in the second. Only one manager in the first period and three managers in the second had significant negative AdjPerf. Net of the systematic factors, managers in both periods were generally able to produce comparable positive adjusted active returns.

A notable change in AdjPerf is the dispersion across managers. In the first period, both average active returns and AdjPerf had low standard deviations across managers (5bp/m for both, Figure 13). In the second period, while the standard deviation of average active returns across managers was also low (6bp/m), that of AdjPerf was about 2.5x higher (14bp/m) because a handful of managers (ie, Mgr10, 16 and 21) had large negative adjusted active returns. Nevertheless, they were still able to generate positive overall active returns by being correctly positioned vis-à-vis some systematic factors. In contrast, some managers (ie, Mgr11 and 12) had relatively large positive adjusted returns. However, they had lower overall active returns, indicating that they lost performance from exposure to systematic strategies.

In the first period, manager average adjusted returns were somewhat lower, but generally close to the unadjusted (reported) active returns (4bp/m vs. 6bp/m), suggesting that they were, on average, able to generate active returns without much reliance on the systematic performance factors. In addition, the variability in active or adjusted active returns was relatively low across managers.

In contrast, in the second period, adjusted returns were, on average, much lower than the active returns (3bp/m vs. 9bp/m), suggesting greater reliance on systematic factors. While there was little variability in active returns across managers, as mentioned, there was much larger variability in adjusted active returns. This suggests that there was much wider dispersion in manager performance arising from the systematic factors. In the second period, there seems to be a change in manager adjusted performance due to higher variability of managers' ability to generate active returns from systematic strategies.

How Did Manager Strategy Selection and Performance Change in the Diminished Liquidity Period?

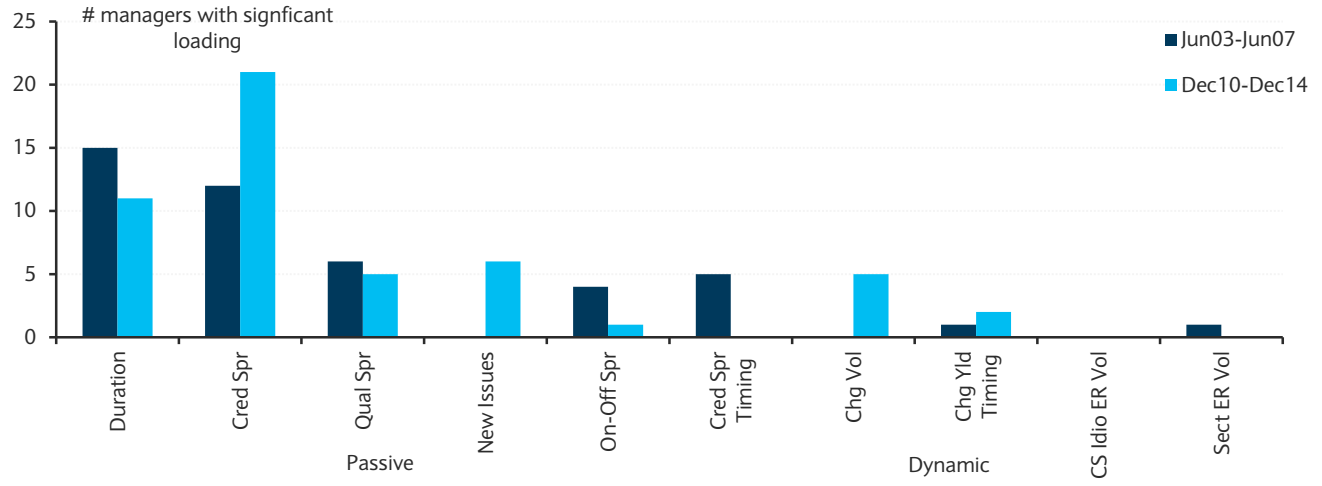
Was there a shift in the selection of strategies that managers employed in the two periods? In a less liquid environment, we might expect more passive strategies and fewer dynamic ones. Also, was there deterioration in managers' ability to extract active returns from the performance strategies? If so, was it related to liquidity conditions?

Deterioration in market liquidity might force managers to rely less on dynamic strategies that require more frequent trading and more on passive, infrequent-trading strategies. Although we cannot know whether they changed strategies strictly because of liquidity concerns, did managers change their strategy mix? In addition, did deterioration in market liquidity affect managers' ability to extract value from any strategy, in general? For example, a manager may find a particular strategy attractive, but the adverse market effect or cost upon exit may result in a loss, instead of anticipated gain.

Figure 14 shows the frequency of a performance factor being significant (either positive or negative) for a manager's active returns for each of the two periods. In the first, three passive factors (Duration, Cred_Spr and Qual_Spr) were the most common significant loading. The most common dynamic factor in the first period was Cred_Spr_Timing followed by Sect_ER_Vol (ie, sector timing) and Chg_Yld_Timing (duration timing).

FIGURE 14

Number of Managers with Significant Exposures to Various Performance Factors; Two Periods



Source: Barclays Research

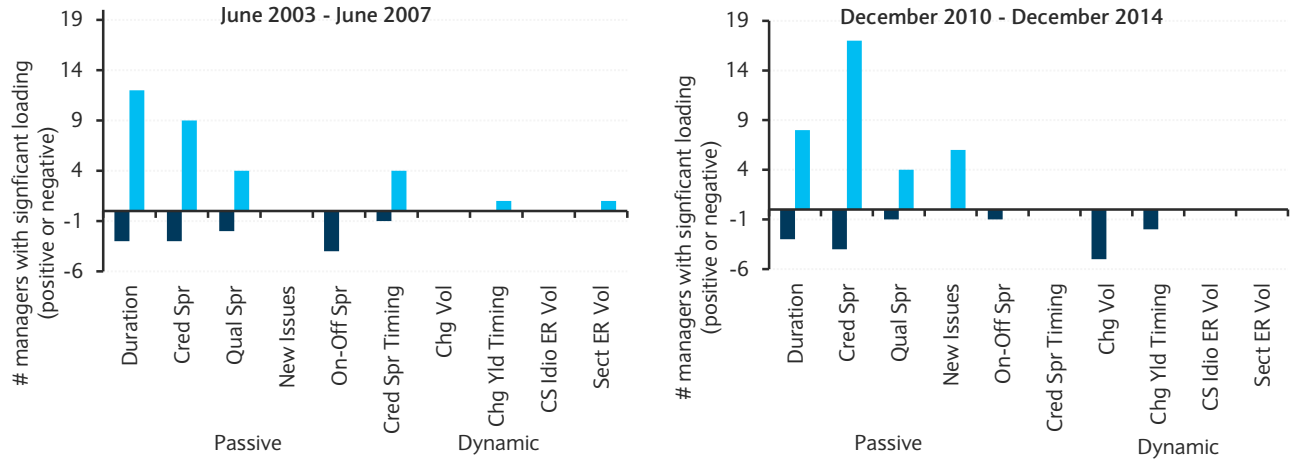
In the second period, the three passive factors (Duration, Cred_Spr and Qual_Spr) were again very common significant loadings. In fact, the Cred_Spr strategy became significant (either positive or negative) for 21 out of 27 managers. In addition, this was a very strong performing factor. Also, the New_Issues factor was significant for six managers. Cred_Spr_Timing disappeared as a significant performance factor in the period, while Chg_Vol (timing changes in VIX) was a significant explanatory factor for five managers.

Overall, there were 44 significant loadings in the first period, of which 37 (or 84%) were for passive strategies. In the second period, there were 51 significant loadings, of which 44 (or 86%) were for passive strategies. Irrespective of the credit market's liquidity, passive factors remained dominant drivers of active returns. Although in the second period the dynamic strategies were enticing due to their higher volatility, perhaps the restricted liquidity environment did not allow managers to take advantage of the opportunity. However, to be fair, dynamic strategies were not a large part of the managers' selected opportunity set even in the first, better liquidity, period.

Although the set of significant explanatory factors did not change all that much between the two periods, perhaps the ability of managers to extract value from a factor changed? In other words, how did loadings on the performance factors change between the two periods? For example, suppose a manager tries to time credit excess returns. In a less liquid environment, this may be costly and difficult to execute. In other words, while it is still a significant performance factor, the manager is able to generate fewer basis points of active return per unit of exposure to this factor. Consequently, the manager's active return may have a reduced, or even negative, loading on this factor because illiquidity may prevent positioning the portfolio correctly.

Figure 15 shows the number of managers with significant loadings on the ten performance factors and whether the loadings were positive or negative. There is a noticeable change in the pattern of factor loadings between the two periods. For the passive strategies, roughly a similar number of managers loaded positively or negatively on the factors in both periods. Specifically, there were 25 significant positive loadings and 12 negative ones in the first period. In the second, there were 35 significant positive loadings and nine negative ones. Primarily, managers had long exposures to the passive factors. However, we see a large shift from Duration to Cred_Spr: more managers were persistently long credit spread duration in the second period, when it proved to be a very successful strategy.

FIGURE 15
Number of Managers with Significant Positive and Negative Performance Factor Loadings, Two Periods



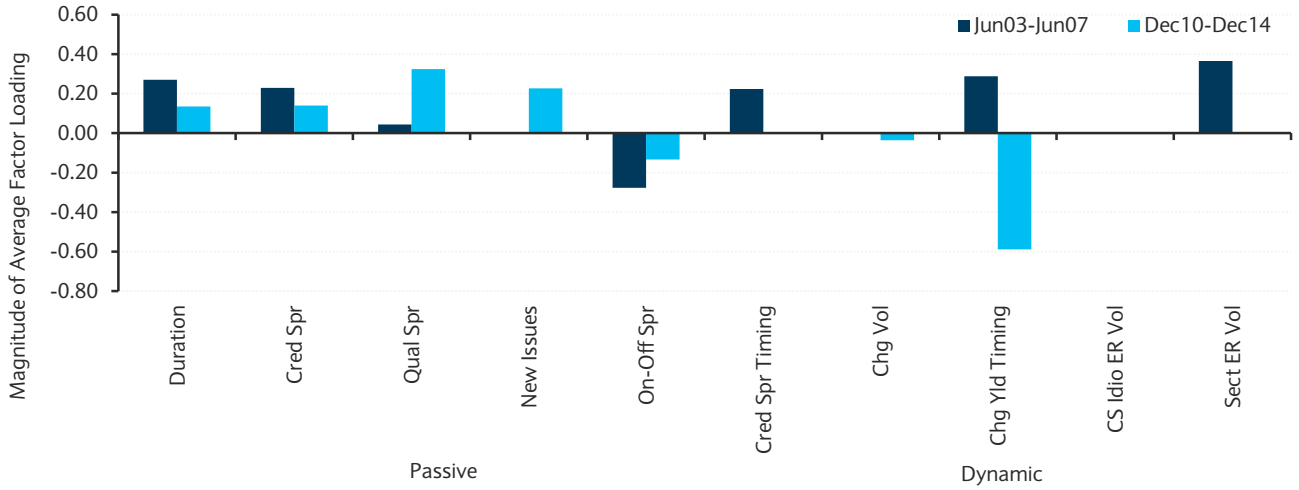
Source: Barclays Research

Figure 15 shows a noticeable change in loadings on the dynamic factors (the last five strategies along the horizontal axis). In the first period, there were six significant positive loadings on the dynamic factors and one negative loading. In contrast, in the second, all seven loadings were negative. Despite the higher volatility and, hence, greater potential of the dynamic strategies in the second period, no manager was able to exploit it successfully.

Figure 16 shows a noticeable drop in the magnitude of the average loadings across managers, especially for the dynamic factors. Note the large swing in the magnitude of the average loading for the dynamic strategies. Chg_Yld_Timing, or duration timing, had a particularly large negative average loading. In the first period, all the dynamic strategies had either no loadings or positive average loadings. We also see in Figure 16 that the two most heavily used passive strategies – Duration and Cred_Spr – displayed reduced manager skill as the average loading on these factors declined.

FIGURE 16

Average Factor Loading across Managers with Significant Loadings, Two Periods



Source: Barclays Research

We bring this all together in Figure 17. As we saw earlier, the average active return increased to 9.4bp/m in the second period from 6.5bp/m in the first. However, the sources of these active returns changed between the two periods. Passive strategies became the dominant source of active returns, increasing their contribution from 1bp/m in the first period to 9bp/m in the second, despite the drop in the average loading on these factors. In addition, dynamic strategies became a source of underperformance, falling from +1bp/m contribution to active returns in the first period to -3bp/m in the second, reflecting the managers' loss of skill in these dynamic strategies.

FIGURE 17

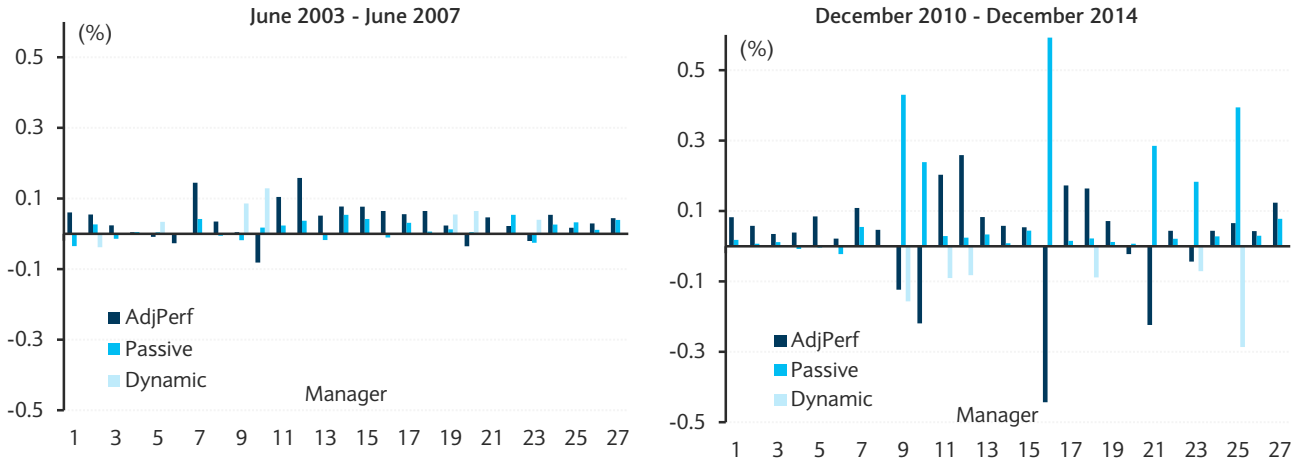
Sources of Manager Active Returns, Two Periods

	Reported Active Return (%)	AdjPerf (%)	Passive Strategies (%)	Dynamic Strategies (%)
Jun 03 - Jun 07	0.06	0.04	0.01	0.01
Dec 10 - Dec 14	0.09	0.03	0.09	-0.03

Source: Barclays Research

Figures 18 shows these results at the individual manager level. In the second period, dynamic strategies were a source of underperformance for all managers who used them. This is in stark contrast with the first period, when all but one manager employing dynamic strategies generated positive active returns.

FIGURE 18
Sources of Active Returns, Individual Managers, Two Periods



Source: Barclays Research

Summary

Irrespective of whether we use manager active returns or adjusted active returns, average credit manager performance was not very different in the second ("worse liquidity") period compared with the first ("better liquidity"). How do our findings relate to the complaints about corporate market liquidity during the second period?

First, it may be that liquidity in the two periods did not differ sufficiently enough to affect credit manager performance. While our liquidity metrics, LCS and PIM, are considerably higher in percentage terms in the second period (ie, indicating worse liquidity), the increase is relatively modest in absolute terms. So perhaps we should not expect much of a difference in adjusted active returns – which is what we observe.

Regarding the mix of systematic performance strategies, we also see that the managers relied on dynamic strategies just as much in the second period as they did in the first. There was no noticeable movement away from dynamic strategies, which, presumably, would have been more difficult to execute in a less liquid environment.

However, we do observe a significant drop in the magnitude of loadings on performance factors between the two periods, especially for dynamic strategies. In other words, although managers were largely employing the same mix of passive and dynamic strategies, they were, on average, less successful in converting them into active returns. It is telling that no dynamic strategy had a significant positive loading in the second period, although all but one had positive loadings in the first period, converting them into positive active returns. It is helpful to highlight the change in loading on CredSpr_Timing. This is a core competency for many credit managers, and one might normally expect a positive loading on this performance factor. However, in an environment of diminished liquidity, a portfolio manager might have difficulty in quickly and efficiently altering credit spread exposures. In the second period, no manager loaded positively on this factor, despite the opportunity offered by the increase in its volatility.

What explains the poor contribution of dynamic strategies in the second period? No manager is expected to have positive skill all the time, especially over short periods. However, our study measured performance over four years – a reasonable length of time for experienced managers to display outperformance. It is odd that managers experienced negative loadings across all the dynamic strategies employed.

It is plausible that liquidity conditions in the second period hampered managers in their ability to profit from dynamic strategies. That no manager had a positive significant loading on any dynamic strategy in the second period suggests that it might have been indeed the deterioration in liquidity that impeded manager performance.

Even if we attribute the negative outcome of these dynamic performance factors to the worse liquidity conditions of the second period, managers were more than able to compensate elsewhere in their portfolios, via passive and non-systematic strategies (ie, AdjPerf), and produce greater active returns in the second period than in the first. The downside to the heavier reliance on passive strategies was that it made active returns more correlated with benchmark returns, reducing their value to asset owners who seek to improve portfolio diversification.

Overall, in the second period, credit managers maintained strong active returns. Successful deployment of passive strategies more than offset the lack of success in capitalizing on the expanded performance opportunities from dynamic strategies. We find that after accounting for the systematic performance factors, credit asset managers were able to deliver roughly the same adjusted active returns in both periods.

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