Non-Idiosyncratic Alpha: *A Case of the Corporate Bond Market*

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According to the capital asset pricing model (CAPM), the returns of any portfolio consist of two components: a part that is attributable to the return on the market benchmark and a so-called idiosyncratic part (e.g., Sharpe [1963]). The former is commonly referred to as beta and the latter as alpha. Despite frequent criticisms of the assumptions and conclusions of the CAPM, its concepts of alpha and beta are an integral part of today's portfolio construction and attribution.

The definition of alpha as the difference between a portfolio's returns and those attributable to its expected beta to the market underpins a common belief of an almost axiomatic conviction that alpha and the market returns are completely unrelated. With its powerful simplicity, this belief certainly aids in separating the two sources of portfolio returns—the task in which the investment management industry still has some room for improvement (e.g., Anson [2004]; Siegel [2004]). Yet, the assumption that alpha and the market returns are unrelated should not be taken for granted. At least hypothetically, it is quite possible for alpha to be affected by the market returns if there are more opportunities to generate alpha in certain market environments.

In reality, of course, realized alpha is dramatically influenced by the portfolio manager's level of skill. The alpha returns of an inconsistent portfolio manager might as well be random. In contrast, expected alpha (the performance target) should be directly proportional to the expected size of the alpha opportunity set encompassing all potential alpha generating trades. The same is true for realized alpha of a consistently skillful manager (CSM)—the type most plan sponsors would like to hire—who is able to systematically take advantage of a certain portion of alpha opportunities. His alpha will rise with the alpha opportunity set available to him. Consequently, if the alpha opportunity set is affected by the market performance, expected alpha and realized alpha of a CSM will not be totally idiosyncratic.

So is the size of the alpha opportunity set related to the market returns? To answer this question we need to consider the potential sources of alpha. Once a market benchmark has been identified, there are only two ways to generate alpha: security selection and beta timing (tactical deviations from the expected beta of the portfolio).[1] The alpha opportunity set, therefore, increases when there are more security selection and beta timing opportunities.

The return potential of beta timing strategies is directly proportional to an absolute value of the market returns. Assuming no leverage, larger absolute values of either positive or negative market returns should enable a CSM to generate more alpha. In the words of some hedge fund managers, "volatility is

good." Conversely, when the market returns are close to zero, there is little or no alpha to be generated from beta timing. Thus, for a CSM exclusively relying on beta timing strategies to generate alpha, the realized alpha will always be a direct function of the market returns.

The relationship between the return potential of security selection strategies and market returns is, however, less obvious and more intriguing. By definition, the total sum of all individual security alphas (both positive and negative) in any market is always zero.[2] However, the alpha opportunity set from security selection—the sum of absolute values of all security alphas—can vary quite dramatically between the extreme case of zero in which all securities are perfectly correlated with the market and, at least theoretically, infinity.

In practice, however, there is likely to be a limit as to how large the security-selection alpha opportunity set can get simply by adding *ad infinitum* new securities which are less than perfectly correlated to the market. Indeed, it is unreasonable to expect a portfolio manager who can consistently extract certain alpha from a market consisting of one thousand securities to generate twice as much alpha if the market grows to two thousand issues. The number of securities that the portfolio manager and his team of fundamental and/or quantitative analysts can realistically analyze and continuously follow, in order to be at least one step ahead of the market, determines the upper limit after which the mere addition of new securities should have no effect on the alpha opportunity set.

For the portfolio manager who is already at his "scope constraint," the size of the alpha opportunity set is influenced by factors other than the number of securities in his market. Ultimately, these factors are probably asset-class dependent and should be examined on a case-by-case basis. Nevertheless, common threads, such as the impact of market returns, are plausible. By focusing on the corporate bond market, the article finds that a CSM operating at the scope constraint should generate higher alpha in the bear market and, perhaps, during an early recovery phase immediately following it. This is because cyclical downturns serve as a catalyst for greater credit re-rating which can be profitably exploited. Conversely, the alpha opportunity set consisting of all profitable security selection trades shrinks when there is less credit re-rating as the bull market becomes more entrenched.[3]

This finding has direct implications for determining what constitutes an appropriate alpha target. Unless the use of leverage is allowed, the ability of a CSM of the credit portfolio to generate alpha is market dependent. By implication, a floating rather than fixed level of alpha appears to be a better performance goal. In fact, viewed from a different angle, the alpha opportunity set is also a measure of the active management risk. It is, therefore, quite reasonable to let an alpha goal float in order for it to be consistent with the varying level of risk associated with active management of the portfolio.

The article examines the corporate bond market not only because of the author's greater familiarity with fixed income, but also because changes in bond ratings provide a unique and helpful way of separating security selection from beta timing opportunities. The first part of the article examines why this is the case, and the second relates the rating action rate—a proxy for the alpha opportunity set for security selection strategies—to the overall market performance.

IDENTIFYING SECURITY SELECTION OPPORTUNITIES

In the corporate bond market, credit ratings assigned by the rating agencies are a measure of the company default risk for which investors demand compensation in the form of a credit spread over the yield of U.S. Treasury bonds with similar duration. By controlling for credit quality, average spreads of the rating buckets which encompass multiple bonds with the same credit rating fluctuate with the index spreads in a predictable, market-directional way. Lower-rated buckets outperform the market when the index spreads are tightening (the market is rallying), while the better-rated buckets outperform the market when the index spreads are widening (the market is selling off).

As such, making a bet on one rating bucket versus another is a market-directional beta timing strategy and not a security selection strategy. This can easily be seen by regressing spread changes of various buckets on spread changes of the index.[4] In all cases, as Exhibit 1 demonstrates, the intercept (measured in basis points), or alpha, is very close to zero, while coefficients, or betas, are inversely related to the credit quality. These results are consistent with the recent industry research suggesting that betas calibrated to reflect credit ratings may be a better measure of the market risk than traditional historical estimates[5] which are notoriously unstable and fail to take into account structural changes in credit quality (e.g., Angammana and Leung [2006]).

EXHIBIT 1

Monthly Spread Changes: Rating Buckets Versus the Index (Jan 97–May 06)

Rating	Index	Intercept, bps. (alpha)	Coefficient (beta)	Rsq. adj.
Aaa	Lehman US Agg. Corp.	0.07	0.14	0.14
Aa	Lehman US Agg. Corp.	0.03	0.53	0.76
A	Lehman US Agg. Corp.	-0.02	0.87	0.86
Baa	Lehman US Agg. Corp.	-0.09	1.37	0.93
Ba	Chase Global HY	0.26	0.67	0.82
B	Chase Global HY	-0.41	1.07	0.95
Caa	Chase Global HY	-1.29	2.00	0.51

Source: Bloomberg, author's calculations.

Therefore, security selection opportunities only arise when a bond transitions from one rating category to another (i.e., its beta changes) or, more precisely, when the market prices-in such a transition. In other words, the same event (e.g., a merger, a structural shift in the industry, new management, and so forth) which "causes" a security's return to have a sizeable alpha component, also changes its expected beta. A positive alpha event is risk reducing and should lower the beta going forward. In contrast, a negative alpha event injects more risk and should raise the expected beta. The presumption that there can be no alpha without a corresponding change in beta (and vice versa), of course, ignores occasional security selection opportunities which may be present for "technical" reasons even when there are no changes in the fundamental credit quality. It is important to note, however, that many "technical" trades (e.g., buying illiquid bonds) are in fact market directional and do not generate security selection alpha.

The market typically leads the rating agencies in reflecting changes in creditworthiness. Credit ratings are sticky on both the upside and the downside, as the rating agencies try to rate "through-the-cycle" (Altman and Rijken [2005]). Thus, the rating agencies do not respond immediately to shifts in credit quality but prefer to wait for the evidence confirming their permanence before changing a credit rating. However, on average, rating changes (especially downgrades) and the related movements in bond prices are not separated in time by more than a few months (Covitz and Harrison [2003]). This is consistent with a finding that the through-the-cycle methodology delays the timing of rating migrations relative to the actual changes in creditworthiness by 0.56 of a year on the downgrade side and by 0.79 of a year on the upgrade side (Altman and Rijken [2006]).

Consequently, at any given point, the rating action rate in the subsequent 12 months, expressing the total number of rating changes (both upgrades and downgrades) as a percentage of all rated credits, is a more or less fair approximation of the set of alpha-generating security selection opportunities available at (or a few months prior to) that time. When the rating action rate goes up, signifying that there are more companies undergoing changes in credit quality which can be profitably exploited, so does the alpha opportunity set. Conversely, when the rate plunges, indicating a more stable period, security selection opportunities diminish.

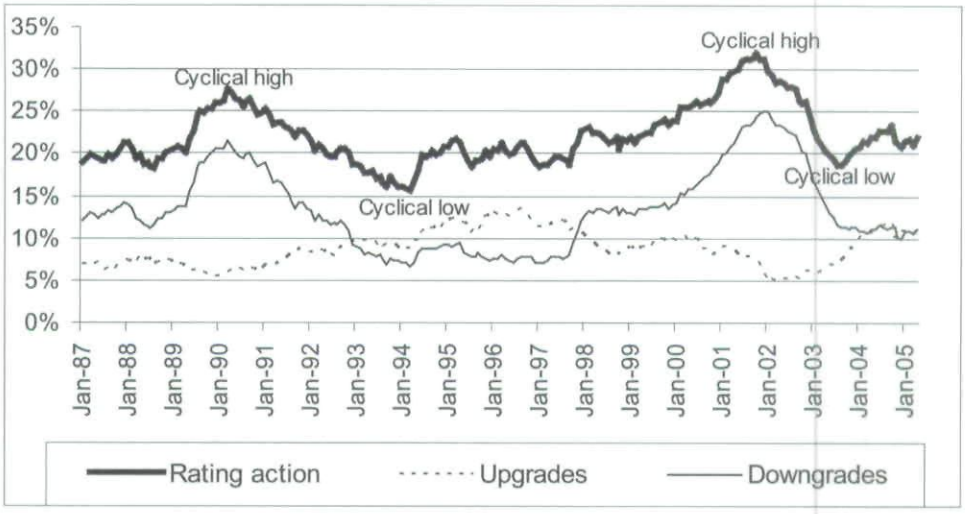
COUNTER-CYCLICAL VARIATIONS IN THE RATING ACTION RATE

Fluctuations in the rating action rate are dominated by variations in the downgrade rate. Using Moody's data, Exhibit 2 shows that the downgrade and the upgrade rates have historically tended to move in opposite directions. However, declines in the upgrade rate have not been severe enough to more than partially offset big jumps in the downgrade rate, resulting in the two pronounced spikes (+30% and +50%, respectively) in the total rating action rate since 1987. Conversely, the total rating action rate reaches its lows when the downgrade rate bottoms but the upgrade rate has not yet fully rebounded.

As a result, fluctuations in the rating action rate are correlated with the macroeconomic cycle, with the rate rising in recessionary environments when downgrades accelerate and falling during economic expansions when there are relatively fewer companies experiencing downgrades. Exhibit 3 depicts this relationship by plotting the rating action rate against the Chicago Fed National Activity Index, a monthly GDP proxy.[6] Positive levels of

EXHIBIT 2

Percentage of North American Issuers with Rating Actions in the Next 12 Months (1987–2005)



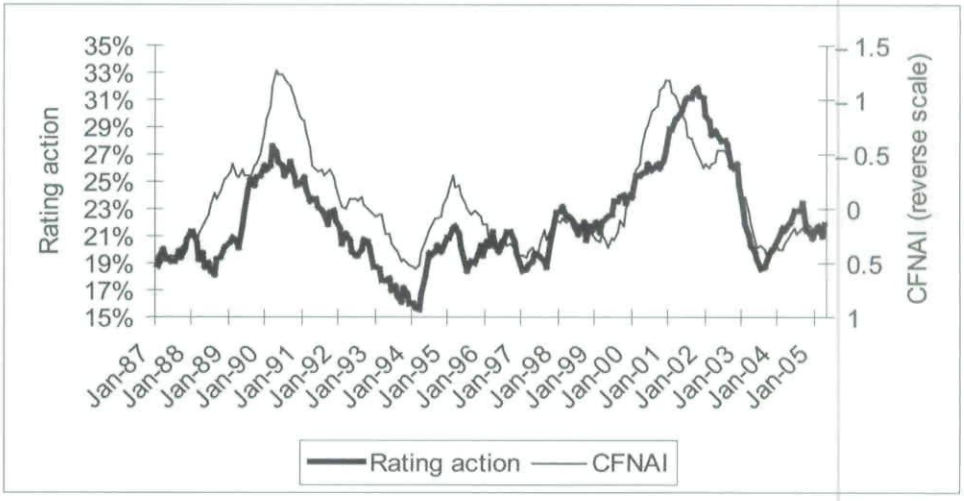
Source: Moody's.

the CFNAI indicate that the U.S. economy is growing above trend, while negative levels correspond to below-trend growth.

Given how closely the rating action rate tracks the economic cycle, it is not surprising that it is also linked to the performance of the corporate bond market. For example, as illustrated by Exhibit 4, the rating action rate rises with the spread of the Credit Suisse High-Yield Index (formerly the Donaldson, Lufkin & Jenrette HY Index) and reaches its highest peaks when the market is close to its bottom (the spreads are at their widest).

EXHIBIT 3

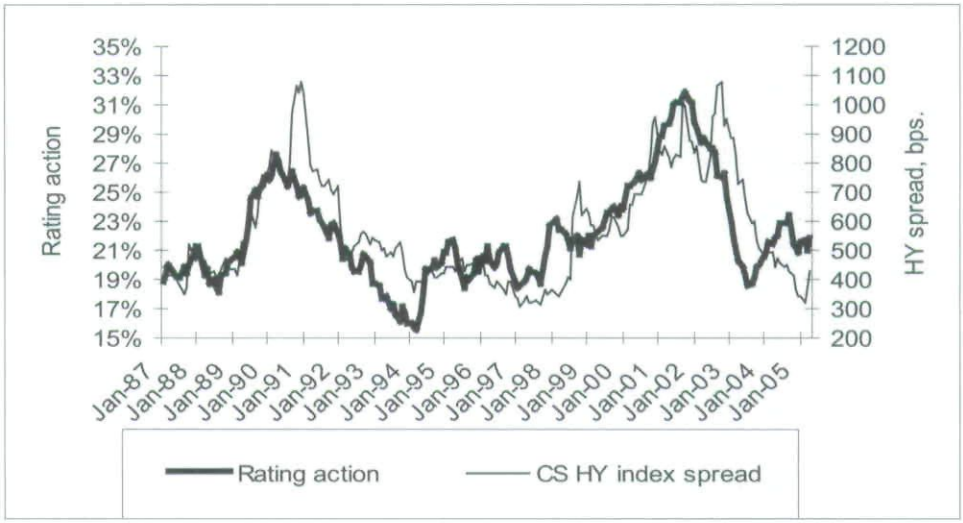
The Rating Action and the CFNAI Average in the Next 12 Months



Source: Moody's, Federal Reserve Bank of Chicago.

EXHIBIT 4

CS High-Yield Index Spreads and the Rating Action Rate in the Next 12 Months



Source: Moody's, Credit Suisse.

It is worth highlighting that, when the market starts to recover, the rating action rate, though rapidly contracting, can still be relatively elevated because of the belated downgrades. However, at this point in time, most of the bad news is likely to be already priced-in. In other words, the elevated rating action rate during the early recovery phase may overstate the alpha opportunity set. As the bull market becomes more entrenched, the rating action rate drops to its lows before rebounding somewhat when the upgrade trend intensifies, while the downgrade rate stays relatively constant at a subdued level. Relative to the bear market spikes, however, the bull market rebound in the total rating action rate is quite modest.

So why do downgrades push up the total rating action rate during cyclical downturns while upgrades fail to have as strong of an impact during cyclical upswings? The answer could be that a recession is a negative shock which disrupts the "normal state" of economic expansion. By definition, this shock results in unexpected (by the market and the rating agencies) rapid deterioration in the credit quality of companies, prompting a spike in the downgrade rate. Alternatively, from the perspective of a skillful portfolio manager, recessions "uncover" the hidden credit problems which could have nonetheless been spotted earlier. Credit reassessments precipitated by economic downturns are further exacerbated by the heightened levels of optimism which tend to be characteristic of the mature phase of cyclical economic expansions. It is exactly at the end of this phase that incidents of mispricing, which will give rise to security selection alpha when corrected in the impending bear market, are most abundant.

Market cycles, however, are not the only factor influencing the size of the alpha opportunity set. Moody's historical data also reveal that lower-rated bonds have had less stable ratings (Exhibit 5).

This fact has two important implications. First, it means that, on average, the absolute value of alphas of corporate bonds is positively correlated with their respective fundamental betas. In other words, riskier bonds present more security selection opportunities. Second, the propensity of less creditworthy bonds to be prone to rating changes suggests that, *ceteris paribus*, the rating action rate should be directly proportionate to the share of less creditworthy issues in the total rated universe. That share, however, is quite pro-cyclical. It rises in expansionary environments when even the least creditworthy corporations find it easier to obtain financing (for which they typically need a rating) and falls during recessions when the skittish capital markets close to the most levered issuers. Thus, the greater likelihood of a lower-rated bond to experience a rating change has a dampening effect on the

EXHIBIT 5

Average Annual Whole Letter Rating Migration Matrix, 1920–2005

Beginning of Year Rating	End of Year Rating								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	**88.4**	7.0	0.8	0.2	0.0	0.0	0.0	0.0	3.7
Aa	1.2	**85.5**	6.5	0.7	0.2	0.0	0.0	0.1	5.7
A	0.1	2.9	**85.3**	5.4	0.7	0.1	0.0	0.1	5.5
Baa	0.0	0.3	4.7	**80.9**	5.3	0.8	0.2	0.3	7.5
Ba	0.0	0.1	0.5	6.0	**73.6**	7.0	0.6	1.3	10.8
B	0.0	0.1	0.2	0.7	6.4	**71.2**	5.5	4.2	11.7
Caa-C	0.0	0.0	0.1	0.2	0.9	6.8	**66.6**	13.9	11.5

Source: Moody's, Hamilton et al. [2006].

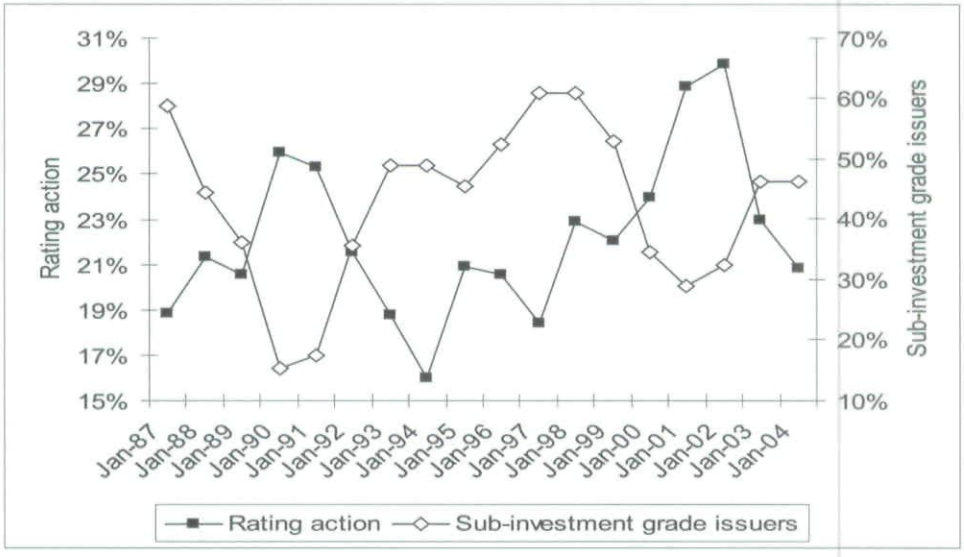
counter-cyclical variation in the total rating action rate (Exhibit 6). If it were not for this effect driven by the issuance cycle, the variation in the total rating action rate would have been even more pronounced.

Of course, it is not just the number of security selection opportunities, but also their return potential, that matters for alpha generation. The latter can be approximated by the degree to which the rating action rate consists of multiple upgrades or downgrades. The premise of this approximation is quite simple: the greater the re-rating of credit quality of an issuer, the greater is the repricing of its bonds. In this regard, it is important to note that the rating action rate and the large rating action rate (comprising rating changes in excess of two notches within one year) are highly correlated (Rsq. adj. = 0.80) and, hence, exhibit the same cyclical behavior (Exhibit 7).

Moreover, the standard deviation divided by the mean—a measure of relative volatility—is much higher for the large rating action rate (43%) than for the rating action

EXHIBIT 6

The Percentage of Issuers Rated Below Investment Grade Versus the Rating Action Rate in the Next 12 Months



Source: Moody's.

EXHIBIT 7

The Rating Action Rate and the Large Action Rate in the Next 12 Months

Source: Moody's.

rate (16%). This suggests that the alpha opportunity set comprising only the trades with the highest return potential exhibits even more pronounced relative expansions and contractions. Indeed, during the last two recessions (1990–1991 and 2001), the large rating rate rose by 60% and more than 300%, respectively, from its preceding lows.

Finally, the large rating action rate stays depressed throughout the bull market, thus not even showing a modest upgrade-driven rebound. This is because multiple upgrades are much less common than multiple downgrades (Exhibit 8). This finding is quite supportive of an argument that recessions are an "unexpected" shock to the market prompting large re-ratings of credit quality, while economic expansions are not.

NON-IDIOSYNCRATIC ALPHA

Counter-cyclical fluctuations in the alpha opportunity set, as measured by the rating action rate and the large rating action rate, suggest that realized alpha of a consistently skillful corporate bond manager is not totally idiosyncratic. In particular, alpha from security selection strategies rises when the market enters the bear phase.

This implies that a floating rather than fixed level of alpha is a better performance target. Based on the experience of the corporate bond market over the past two decades, expected alpha of a market-neutral portfolio should rise during cyclical downswings and fall during upswings. If, however, a portfolio is allowed to employ leverage, expected alpha can be smoothed. The portfolio manager would use more leverage when security selection opportunities are scarce and less leverage when they are more abundant.

It remains to be seen whether a similar relationship between security selection alpha and the market performance is true of other asset classes. It is quite possible that the sudden nature of economic downturns may also precipitate the reassessment of betas of other securities to their respective markets, thus presenting security selection opportunities.[7] Indeed, a large body of literature exists on whether stock betas are stationary with respect to market phase (e.g., Fabozzi and Francis [1977]; Gooding and O'Malley [1977]; Kim and Zumwalt [1979]). Although the evidence on varying beta over the bull and bear markets remains mixed, an argument that at least some stock betas increase (decrease) when the market is bearish (bullish) continues to be resurrected (e.g., Granger and Silvapulle [2001]). The situation in which stock beta changes are more frequent and pronounced in bear markets than in bull markets would be quite consistent with the prevalence of alpha opportunities in cyclical downturns observed in the corporate bond universe.

EXHIBIT 8

Percentage of North American Issuers with Large Rating Actions in the Next 12 Months

Source: Moody's.

In general, in the absence of the equivalent of credit ratings, separating beta timing from security selection is likely to be more difficult in equity markets, as there can be a lot of disagreement about what the true beta of a stock really is (e.g., Reilly and Wright [1988]).[8] Nevertheless, it is definitely worth taking a closer look.

ENDNOTES

The author would like to thank Jeffrey Kaufman and Robert Bloemker for helpful comments.

[1]For an exposition of this argument, see Waring and Siegel [2006]. However, Waring and Siegel take the benchmark or the strategic beta mix of the "normal portfolio" as a given, rather than consider it as a valuable opportunity to generate higher returns. As such, the value added through a superior benchmark selection does not neatly fit into the alpha/beta classification. On the one hand, it is not due to a "mere" beta exposure which, as Waring and Siegel correctly suggest, should be quite cheap. Making the right decision about the normal portfolio requires a considerable and rare skill. On the other hand, it cannot be called alpha either. Indeed, alpha is defined in relation to the manager's benchmark which she is selecting here in the first place. A potential suggestion to use CAPM's all-encompassing market portfolio as the "default" benchmark sounds good in theory but is difficult to define in practice, especially now given the rapid pace of financial innovations and the corresponding expansion of the investment universe.

[2]Alpha of an individual security is the intercept of the security characteristic line—a regression line through all combinations of the market return and the return of the security.

[3]The bear (bull) market is defined as a sustained multi-month sell-off (rally) in credit spreads. Historically, the sustained moves in credit spreads have been highly correlated with the macro-economic cycle.

[4]It is worth noting that there can be divergences between returns implied by spread changes and the actual credit returns. In particular, spread changes reflect changes in the pricing of risk of a bucket of bonds sharing the same credit rating, while actual returns also absorb the impact of bonds leaving the bucket when they undergo changes in their credit quality (i.e., upgrades, downgrades) or default. As a result, regressing actual returns on those of the index can produce intercepts that significantly deviate from zero. In particular, a BB-rated bond has a positive intercept and a CCC-rated bond has a negative intercept. For a review of these inconsistencies in pricing credit risk, see Kozhemiakin [2007].

[5]Beta = Correlation * (Volatility of Security / Volatility of Index).

[6]The biggest advantage of the CFNAI is its monthly frequency. The index—the first principal component of 85 monthly indicators on national economic activity—is constructed to have an average value of zero and a standard deviation of one. Because economic activity tends toward the trend growth rate over time, an index reading of zero corresponds to an economy growing at trend. Background information on the

CFNAI is available on the Federal Reserve Bank of Chicago website at www.chicagofed.org.

[7]For example, a fundamentals-weighted (rules-based) stock market portfolio constructed by Arnott, Hsu, and Moore [2005] and recently launched as an exchange-traded fund (ticker: PRF) has outperformed the traditional capitalization-weighted equity benchmark in different types of market environments from 1962 until 2004. And yet, excess returns generated by the portfolio in bear markets have been substantially higher than those in bull markets. As acknowledged by Arnott et al. however, the superior performance of the fundamentals-weighted market portfolio is attributable not only to the pure CAPM alpha (driven by a structural negative return bias in cap-weighted benchmarks), but also potentially to some hidden beta exposure.

[8]In many cases, historical regression-based betas are very unstable, with their estimates varying with a calculation window. Expanding the calculation window, however, risks incorporating periods of history in which the market risk of the stock was structurally different.

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