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Signs of Hidden Talent: Uncovering the Best Ideas from Long-Only Managers

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OCTOBER 2004

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GLOBAL LEADERS IN MULTI-MANAGER INVESTING

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We thank Craig Austin, David Cariño, Sudhesh Dahad, John Forrest, Tom Goodwin, Tim Hicks, Brad Lawson, Steve Murray, Jackie Murphy, Gayle Nolte, George Oberhofer, Yvonne Ooi, and Mahesh Pritamani for their assistance, suggestions, and comments.

ABSTRACT

While the benefits of eliminating constraints on shorting and leveraging are not difficult to imagine, they have proved difficult to quantify. Others have attempted to evaluate the performance impact of the long-only restriction; however, the exclusive use of published returns from mutual funds and hedge funds (not constrained to long-only) hampers their accuracy. By utilizing the Russell database of US equity manager holdings spanning more than a decade we advance this line of research by offering a more accurate description of what is… and what could be. To assist us in creating the holdings that might-have-been, we appeal to results from a theoretical evaluation of decision-making and simulation. By relaxing the long-only constraint, we successfully improve the empirical performance of the managers. Moreover, we find that skill, the opportunity set of a manager, and the ability to operate in a favorable environment improve the benefit from removing the long-only constraint. We also find that managers are far better at avoiding bad stocks than they are at finding the good ones.

"Got to be good-lookin' 'cause he's so hard to see…"

John Lennon, Abbey Road

October 18, 1969

The true mystery of the world is the visible, not the invisible.

Oscar Wilde

INTRODUCTION

Many investment managers are restricted from engaging in short selling or borrowing cash to leverage long positions. Specifically, the potential for unlimited losses from a poorly chosen short sell is often considered too risky for pension fund administrators charged with securing the income of retirees or for the typical mutual fund investor. Moreover, the rise of benchmark-relative investing from the 1970s through the 1990s led to a highly standardized method of investing. The introduction of style benchmarks in the 1980s and 1990s was an answer to evaluating specialized managers. Throughout the boom of the 1990s, buying and holding equity securities seemed to be an infallible strategy, unless active manager returns were compared to index returns. While buying and holding equity securities avoided the risk of unlimited short-selling losses, many investors realized that they could do just as well with a cheap index as they could with a highly priced active manager. So what is the story here? Do active managers have talent? Has the culture of benchmark-conscious investing stifled performance?

The practice of buying and holding securities, or long-only investing, limits the portfolio manager's ability to benefit from stocks expected to decline and even from stocks expected to do well. Such limitations on manager performance stem from two sources: the inability to take net short positions and the culture of benchmark-relative performance evaluation. Restrictions on short positions reduce the impact of high conviction positions, while benchmark sensitivity results in holdings meant to reduce tracking error rather than to generate return. By eliminating the long-only constraint, we seek to evaluate the benefits to be gained from a manager's unrestricted choices of positions in stocks.

While the benefits of eliminating constraints on shorting and leveraging are not difficult to imagine, they have proven difficult to quantify. Grinold and Kahn (2000a, 2000b), Kahn (2002), and Clarke, et al. (2002) have attempted to evaluate the performance impact of the long-only restriction. However, the data used in those studies consists of published returns from mutual funds and hedge funds (not constrained to long-only), which hampers their accuracy. Unfortunately, published returns databases of hedge

funds are known to contain several biases that inflate their average returns, thus rendering comparisons to other databases with fewer biases somewhat misleading.[1] Furthermore, Finn, Fuller, and Kling (1999) found higher risk-adjusted returns in shorting bad securities than in buying good ones.

In this paper, we analyze portfolio *holdings* in combination with returns. By utilizing the Russell database of US equity manager holdings spanning more than a decade—a database unavailable to most researchers—we advance this line of research by offering a more accurate description of what is… and what could be.[2] The advantage of having access to manager holdings is that we can evaluate both actual holdings and the holdings that might have been chosen if no long-only constraint existed.

To assist us in creating the holdings that might-have-been, we appeal to results from a theoretical evaluation of decision-making and simulation. Because we are not able to directly observe the unconstrained bets of managers, we postulate that managers act in a manner consistent with a rational decision model. By calibrating the model with actual holdings under the long-only constraint, we are able to deduce what the holdings would be if the constraint were removed.

The theoretical model of portfolio decision-making is developed and analyzed in a companion to this paper, Fox and Ross (2004). We find there that our theoretical model is consistent with manager behavior.

Ultimately, we can only make educated guesses about how managers might construct their portfolios in the absence of a long-only constraint. In this research, we find that by using our educated guesses to relax the long-only constraint, we can improve the empirical performance of the managers.

The advantage of having data over many years is that our results should not be unique to any particular economic or market environment.

The reconstruction of manager portfolios allows us to demonstrate several intuitive and appealing results. First, skill matters and is identifiable. Managers with identified skill benefit more from removing the long-only constraint. Second, opportunity matters. Small cap managers, with a notably less efficient pool of securities, benefit the most from removing the long-only constraint. Third, the ability to operate in a favorable environment matters. Managers do better when cross-sectional volatility is lower. Finally, managers are far better at avoiding bad stocks than they are at finding the good ones.

We develop the paper as follows. In the next section we review some findings from our companion piece regarding theoretically-derived manager preferences. Then, in the subsequent section, we use the findings to reconstruct the portfolios of US equity managers to reflect what managers might have done if they were not constrained, and evaluate the improvements in excess return and excess return adjusted for tracking error. By combining theory with manager holdings, we make an educated guess about the composition of a manager's unconstrained portfolio. We compare

[1] Hedge fund database biases include self-reporting bias, backfilling bias, survivorship bias, a small firm bias, and a net-of-fee reporting bias. See Brown, Goetzmann, and Ibbotson, (1999).

[2] We borrow the data used in Pritamani (2003) and thank Mahesh Pritamani for sharing this data with us.

this theory-driven scheme to a more naïve scheme for creating unconstrained manager portfolios and determine that educated guesses perform better than naïve guesses.

USING THEORY TO EVALUATE MANAGER PREFERENCES

Uncovering the hidden value in long-only manager portfolios requires several steps. The first step is to postulate a decision-making process by which a manager chooses a portfolio. In this section, we present findings from Fox and Ross (2004) where we model a manager maximizing excess return subject to a tracking error constraint.

The one-period optimization model is a straightforward extension of the classic Markowitz portfolio choice problem. We assume that each manager maximizes a mean-variance utility function in benchmark-relative space by choosing security weights. The weights must sum to one (full investment) and, for long-only managers, are non-negative (no shorting). The manager chooses from a defined, finite universe of securities with estimated means, standard deviations, and correlations of expected returns. As in Fox (2000), managers are assumed to possess forecasting skill which is defined as their ability to evaluate noisy signals of future security returns.[3]

From the analysis, we identify a number of key relationships regarding a long-only manager's optimal security weights.[4] From those findings we especially note the following:

- Although an increase in risk tolerance will increase the magnitude of some bets and decrease others, on average the more risk-tolerant manager will have larger absolute bets.
- High expected volatility securities will have portfolio weights close to benchmark weights.
- A manager with greater forecasting skill will increase the magnitude of underweights if (but not only-if), the manager's assessment of security's performance outlook is below its long-run mean.
- A decrease in the magnitude of the forecast signal will decrease bets.

These relationships are generally intuitive and we employ them explicitly as a means of understanding how managers would behave under other circumstances. We combine the database of actual portfolio holdings—as a representation of what managers chose to do under a particular set of circumstances—with these findings to hypothesize what managers would have done had they operated under fewer constraints.

Throughout the ensuing discussion, we consider weights, bets, and absolute bets as defined below:

[3]Jorion (2003) highlights several issues associated with benchmark-relative optimization. Our point here is not to affirm any particular type of optimization, only to recognize that such a practice is typical and evaluate some issues specific to that practice.

[4]See Fox and Ross, (2004) for a detailed account of these key relationships.

Weights *are portfolio or benchmark position weights (depending upon the context), which sum to one for a long-only portfolio.*

Bets *are portfolio weights less benchmark weights, which sum to zero for the long-only portfolio. Bets may be long/positive (an overweight or long bet) or short/negative (an underweight).*

An ***absolute bet*** *is the absolute value, or magnitude, of a manager's bet and is always expressed as a positive number.*

Sum of absolute bets *is always positive and measures how far the manager's portfolio diverges from the benchmark. The sum of absolute bets is our proxy for manager risk tolerance.*

Because a bet is simply the portfolio weight less the benchmark weight, changes in the choice of optimal portfolio weights are identical to changes in optimal bets. Therefore, we take some liberties in referring either to the effects of various factors on weights or bets—primarily we are interested in bets. The change in magnitude and direction will be the same whether it is a weight or a bet. However, changes in *absolute bets* are the opposite of changes in weights or bets if the bet is negative.

In the next section, we combine the above theoretical results with some simplifying assumptions and use holdings data from the universe of US equity managers to reconstruct portfolios. With these reconstructed portfolios we evaluate the resulting changes in the risk/return tradeoff and portfolio performance.

EMPIRICAL EVIDENCE

Simplifying Assumptions

The opportunity cost of an active portfolio is the return of an indexed portfolio. This astute realization is the basis for using indexes to evaluate manager performance both in terms of reward (excess return) and risk (tracking error). Woe to the manager who underperforms the benchmark or shows excessive volatility around benchmark returns. Given the sensitivity among managers and the investment community to index holdings and returns, we build our empirical analysis out of the Russell suite of US equity indexes and the Russell universe of US equity managers. Our data comprises quarterly holdings and returns from 1990Q1 through 2001Q2.[5]

To facilitate the analysis, we make the following assumptions.

Assumption 1: *Managers choose their long-only holdings from the Russell suite of indexes.*

[5]To avoid a duplication of data collection, we use data from Pritamani (2003). While the sample period from this data ends in 2001Q2, the results should not be specific to any sample period. For a detailed description of the data see Pritamani (2003).

We focus our study on those managers assumed to draw their investment universe from the capitalization and style subsets of the Russell 3000® Index.[6] In many cases, such an assumption is a strong one. For example, many large cap US equity managers would more closely follow the S&P 500®, and many small cap US equity growth managers would delve lower into the cap spectrum than the R2000G can offer. Because we do not know which benchmark each manager most closely follows, we assign an assumed Russell index according to the style category of the manager.

In Table 1, we report summary statistics for the Russell suite of indexes. The R1000 and R2000 will generally have just a few less than 1000 or 2000 securities, respectively. The shortfall of securities results from mergers, acquisitions, bankruptcies, and de-listings.

[6]We use the following notation for Russell indexes: R1000 denotes the Russell 1000® Index; R1000G denotes the Russell 1000® Growth Index; R1000V denotes the Russell 1000® Value Index; R2000 denotes the Russell 2000® Index; R2000G denotes the Russell 2000® Growth Index; and R2000V denotes the Russell 2000® Value Index.

Table 1

Summary Statistics of Russell Indexes

	Average Over Sample Period†				
	Holdings	Weights			
	Average	Average	Standard Deviation	Minimum	Maximum
R1000	981	0.102%	0.225%	0.001%	2.948%
R2000	1931	0.052%	0.044%	0.001%	0.338%
R1000G	548	0.184%	0.466%	0.001%	5.363%
R2000G	1227	0.082%	0.086%	0.001%	0.637%
R1000V	668	0.150%	0.312%	0.001%	4.276%
R2000V	1272	0.079%	0.075%	0.001%	0.510%

† From the number of holdings, and the mean, standard deviation of, minimum, and maximum weights for each index in each quarter in our sample period, we calculate averages. For example, the average of Holdings is the count of holdings for each quarter averaged over all quarters.

By comparison, the universes of manager holdings reveal portfolios with far fewer securities than the indexes. In Table 2, we report the distribution of active manager portfolio holdings.

Table 2
Summary Statistics: Percentage Weights† of Manager Portfolio Holdings
LC=Large Cap, SC=Small Cap, MO=Market-Oriented, G=Growth, V=Value.

Style	Mean	Std Dev	Minimum	Maximum
LC MO	1.61%	0.89%	0.36%	4.74%
SC MO	1.13%	0.60%	0.19%	3.20%
LC G	2.22%	1.23%	0.59%	6.17%
SC G	1.40%	0.81%	0.21%	4.16%
LC V	1.90%	0.98%	0.38%	4.85%
SC V	1.50%	0.78%	0.27%	3.90%
Holdings				
LC MO	97	78	10	558
SC MO	188	230	20	1493
LC G	64	51	16	464
SC G	91	54	15	506
LC V	73	50	13	403
SC V	123	145	21	1154

† From the number of holdings, and the mean, standard deviation of, minimum, and maximum weights for each portfolio in each quarter in our sample period, we calculate averages. For example, the average of Holdings is the count of holdings for each quarter averaged over all quarters.

Assumption 2: *Managers hold low-conviction securities to avoid undesirable benchmark-relative bets and volatility.*

We assume that active managers seek to identify those stocks in their universe that will do better than the others. If a manager believes a security will do better, they should buy it, otherwise, they should not. Given that the R1000 has almost 1000 securities, and that a typical large cap US equity manager might have only 100 securities, a majority of the potential holdings is not included in the typical active portfolio. From these facts, we might conclude that the manager believes those 100 securities will do better than the index, and that the latter 900 will under-perform the index. But this need not be so. Some significant portion of the 100 securities held may be low-conviction holdings. A low-conviction holding is a security held simply to reduce benchmark-relative volatility. Such low-conviction holdings are a direct result of benchmark-relative comparisons and the recognition that the opportunity cost of active management is low-cost passive management. Therefore, in evaluating an active portfolio, we must recognize that not all held positions are active, or high-conviction, positions.

Assumption 3: *Managers do not have a negative opinion on every excluded security in the benchmark.*

Similarly, one might assume from the 900 excluded securities that managers believe all 900 of those securities will under-perform. However, in most cases, managers follow only a subset of benchmark securities, or an intersecting set of the benchmark securities and securities from some other criteria. Indeed, many excluded securities are simply outside the manager's radar or low-conviction securities with too small a benchmark position to hold. Therefore, while some excluded securities truly indicate a negative opinion of the manager, *most* do not.

Assumption 4: *Managers would prefer to short some securities if they could.*

We surmise that a portion of excluded securities are truly negative bets—those stocks the manager is expecting to under-perform the benchmark or experience negative returns. Moreover, we expect that a manager would prefer to short a stock that will experience a negative return.

Indeed, we observe that managers generally exhibit more talent in avoiding stocks than in picking them. In Table 3, we review the returns of managers' "short bets" and managers' "long bets".[7] Because our sample period is dominated by a market expansion, the quarterly returns of longs are positive while the quarterly returns of shorts are negative. On average, if we consider the benchmark-relative returns, we find that the shorted "buy-and-hold" portfolios consistently outperform the benchmark by anywhere from 0.174 to 2.502 percent quarterly (or upwards of 10 percent annually in the case of small cap growth managers). Unfortunately, the long "buy-and-hold" portfolios consistently underperform the benchmark by a few basis points in all styles. Therefore, what managers *don't* buy benefits them far more than what they *do* buy.[8]

[7]Recall from the definition of bets that a short bet is simply a negative position relative to the benchmark in a long-only portfolio. A short position is associated with a long/short portfolio.

[8]Our results are currently specific to US equity managers. While the universality of stock avoidance dominating stock purchase is a pertinent question, it is beyond the scope of this research.

Empirical Result: *Managers are better at avoiding bad stocks than picking good stocks.*

Table 3
Comparison of Average Short and Long Manager Bet - Quarterly Returns in Percent
LC=Large Cap, SC=Small Cap, MO=Market-Oriented, G=Growth, V=Value.

	Absolute Returns		Benchmark Relative	
	Short Positions	Long Positions	Short Bets	Long Bets*
All Bets				
LC MO	-0.041	0.216	0.174	-0.082
SC MO	-0.032	1.707	1.675	-0.064
LC G	-0.038	0.719	0.678	-0.079
SC G	-0.030	2.531	2.502	-0.059
LC V	-0.040	0.712	0.671	-0.082
SC V	-0.035	2.104	2.069	-0.070
Largest Bets†				
LC MO	-0.045	0.142	0.101	-0.087
SC MO	-0.024	1.898	1.866	-0.056
LC G	-0.039	0.768	0.727	-0.080
SC G	-0.028	3.015	2.986	-0.058
LC V	-0.045	0.915	0.873	-0.086
SC V	-0.030	2.338	2.302	-0.065

†These are the largest quartile of long bets and the largest decile of short bets.

Ultimately, our task is to unravel the high-conviction from the low-conviction holdings, and the purposely excluded from the inadvertently excluded. If we can distinguish those securities the manager truly likes and those securities he truly dislikes, we might have some clues as to what a fully active, un-short-constrained portfolio would look like. By making these simplifying assumptions we have a starting point for using manager holdings to unravel their true opinions. In the next section, we build on this idea by incorporating the results of our theory and simulations with these assumptions.

Educated and Naïve Guesses

Our primary hypothesis is that managers are constrained in their ability to manage portfolios to their greatest potential without the ability to short or leverage up their long positions. When a manager has a negative opinion of a security's performance, that opinion is best expressed by taking a negative bet on that security. Unfortunately, the strongest negative opinion a long-only manager can express is to exclude it from the portfolio. Conversely, if a manager has a highly favorable opinion of a security, a positive bet is constrained by the balance of the portfolio holdings. Therefore, holdings may be signals of good opinion, or, in the case of a large benchmark holding, simply the lack of one. Similarly, those stocks in the benchmark

that are excluded from the portfolio may represent negative opinions or may just not be on the manager's radar.

To get from reported manager holdings to high conviction portfolios, we make educated guesses based on the theory, simulation, and empirical evidence discussed above regarding which holdings are low-conviction, high conviction, and constrained. From these educated guesses, we construct portfolios that are less constrained with respect to selling short and leveraging up long positions. In addition to making educated guesses about the preferences of managers, we make less-educated, naïve guesses. From these naïve guesses, we also construct portfolios with short positions and levered long positions. We then compare the new portfolios with the originals.

The Educated Guess Portfolio

With our plethora of theoretical findings, simulations, and empirical truths, we make our best attempt to use that information to create methodically un-constrained portfolios. Here is what we know in a nutshell:

- Higher risk tolerance means bigger bets.
- Managers will take larger positions on less volatile securities.
- Skilled managers may have more confidence in bet-taking.
- Clearer signals increase bets.

From Russell's qualitative understanding of manager behavior we add one more point:

- Managers generally limit position size.

From our evaluation of manager holdings we add our empirical discovery:

- Managers are better at avoiding losers than picking winners.

Putting these points together, we develop a methodology for *enhancing* manager bets. This methodology has four main components.

1. Based on Assumptions 2 and 3 in the previous section, we eliminate benchmark-neutral bets from our enhanced portfolios. We define the smallest quartile of positive bets and the largest quartile of negative bets (i.e. those bets closest to zero) as benchmark neutral. Since these bets hover around zero, we suspect that they represent low-conviction holdings and low-conviction exclusions. We replace the low-conviction holdings and exclusions with benchmark weights.

2. We want to allow each manager's risk-tolerance to influence the Enhanced portfolio calculation. Because managers with higher risk-tolerance should have bigger bets, we use the sum of a manager's absolute bets as a measure of risk tolerance. In turn, we use this measure as the basis for enhancing high-conviction holdings and exclusions. We define a parameter called "*Enhancer*"

as $\min\left(1, \sum absolute\ bets\right)$. Enhanced bets are:

$Original\ Bets * Enhancer$. By setting the minimum *Enhancer* at one, we never use a manager's risk-tolerance level to *reduce* the high-conviction bets, but we may use it to *increase* them.

We provide summary statistics for *Enhancers* in Table 4. The top half of Table 4 exhibits the Sum-of-Absolute-Bets empirical distribution. The bottom half exhibits how this distribution changes when we impose a minimum on the *Enhancer* of one. Notice that the minimum sum of absolute bets for large cap market-oriented managers is 0.34—this very small number is probably indicative of a "closet indexer." By replacing his *Enhancer* with one, we do not change the high-conviction holdings or exclusions. Also notice that censoring the distribution at one does not change the average *Enhancer* by very much. Because the average *Enhancer* is very close to the average Sum-of-Absolute-Bets, we know that very few fell below one and our censorship has a minimal impact.

Table 4
Summary Statistics for Absolute Bets and *Enhancers*
LC=Large Cap, SC=Small Cap, MO=Market-Oriented, G=Growth, V=Value.

	Sample Size†	Mean	Standard Deviation	Minimum	Maximum
Sum-of-Absolute-Bets					
LC MO	2977	1.35	0.29	0.34	1.93
SC MO	1095	1.68	0.13	0.95	1.88
LC G	1410	1.30	0.29	0.45	1.86
SC G	1962	1.72	0.10	0.67	1.92
LC V	1654	1.47	0.25	0.66	1.92
SC V	1684	1.73	0.13	0.98	1.93
Enhancer = min(Sum-of-Absolute-Bets, 1)					
LC MO	2977	1.38	0.25	1.00	1.93
SC MO	1095	1.68	0.13	1.00	1.88
LC G	1410	1.32	0.24	1.00	1.86
SC G	1962	1.72	0.10	1.00	1.92
LC V	1654	1.48	0.23	1.00	1.92
SC V	1684	1.73	0.13	1.00	1.93

†The number of manager/quarter observations in each grouping.

3. We evaluate the distribution of realized three-year tracking errors for securities in each manager/quarter in our sample period. Those securities in each manager/quarter portfolio with above median realized tracking errors (medians are calculated for positive and negative bets separately) we call More Volatile. The remaining securities we call Less Volatile. Because managers are wary of More Volatile securities, we enhance them more conservatively by $Enhancer^{1/2}$.

4. We evaluate the distribution of weights for all securities – both those held in the portfolio and those in the benchmark but excluded from the portfolio. Positive bets with top quartile weights AND negative bets with bottom decile weights we call High Conviction positions.[10] The remainder of active positions we call Low Conviction positions.

Putting all of these components together, we enhance the bets as shown in Table 5. In our methodology, we do not change bet size of Low Conviction securities, we eliminate benchmark-neutral bets, and we enlarge with our Enhancer High Conviction securities.

Table 5
Bet Enhancement Methodology – Multipliers

		Conviction		
		Neutral	Low	High
Volatility	High	0	1	*Enhancer*$^{1/2}$
	Low	0	1	*Enhancer*

To maintain a consistent relative risk-tolerance manager ranking, we add those enhanced bets, the revised active portion of the portfolio, back to the index (passive) weights to re-calibrate the portfolio. When the passive and active weights are recombined, the weights may sum to less than or greater than one and individual weights may become negative.

We show an example of an enhanced portfolio using the methodology above in Table 6.

Table 6
Example of Enhanced Portfolio[11]

Security	Original Weight	Benchmark Weight	Bet	Enhancer	Enhanced Bets	Enhanced Weights
A	0.03	0.32	-0.29	1.33	-0.39	-0.07
B†	0.92	0.26	0.66	1.15	0.76	1.02
C	0.01	0.20	-0.19	1.00	-0.19	0.01
D	0.01	0.20	-0.19	1.00	-0.19	0.01
E	0.03	0.01	0.00	0.00	0.00	0.01
F	0.00	0.01	0.00	0.00	0.00	0.01
Sum Long	1.00	1.00	0.66		0.76	1.06
Sum Short	-0.00	-0.00	-0.67		-0.77	-0.07

† High volatility security.

We show some summary statistics of the shorts and longs that result from our enhancements in Table 7. The median shorts for each universe vary from 6 to 21 percent. This means that six to twenty-one percent of the invested capital for the median manager is short. The median longs have a range from 98 to 113 percent. This means that the median manager borrows up to 13 percent of invested capital to take additional long investments. In

[10]We use quartiles on the long side and deciles on the short side because the number of shorts significantly dominates the number of longs. The shorts are the entire list of securities with smaller-than-benchmark weights in addition to those in the benchmark, but excluded from the portfolio. Particularly in the case of small cap, market-oriented portfolios where the benchmark has some 2000 securities, the number of "shorts" is quite large. Using deciles allows us to focus in on the very largest of short positions – those stocks that are in the benchmark and are very unlikely to be unnoticed by the portfolio manager.

[11]When the Sum Long is greater than one or the Sum Short is less than zero, some sort of borrowing is implied. Generally, long/short managers finance their greater-than-one longs with the rebates from their shorts. For more details see Spear and Wiltshire (2000).

the original portfolios, sum of shorts would always be a zero percent and sum of longs would be close to or equal to 100 percent.

Table 7
Summary Statistics of Enhanced Portfolio Bets
LC=Large Cap, SC=Small Cap, MO=Market-Oriented, G=Growth, V=Value.

	Sum of Short Positions			Sum of Long Positions		
Universe	10th Pctl	50th Pctl	90th Pctl	10th Pctl	50th Pctl	90th Pctl
LC MO	-29%	-7%	0%	95%	98%	110%
SC MO	-20%	-16%	-10%	100%	111%	122%
LC G	-24%	-6%	0%	93%	97%	103%
SC G	-22%	-18%	-14%	104%	113%	124%
LC V	-34%	-11%	0%	94%	99%	112%
SC V	-23%	-21%	-15%	102%	110%	121%

The Naïve Portfolio

A natural comparison to our carefully developed enhancement methodology is a more naïve approach. In our naïve approach, we simply isolate the manager's biggest bets. To isolate the biggest bets, we take the top quartile of over-weights and the bottom decile of under-weights, rescale them such that they sum to the original sum of over and under-weights, respectively. To obtain a consistent risk-tolerance ranking, we then add those positions to index weights. Again, this methodology eliminates small bets.

We show some summary statistics of the shorts and longs that result from our isolated big bets in Table 8. We observe that the Naïve methodology will naturally lead to larger overweights and underweights than our more carefully calibrated Enhanced methodology. In the case of isolated big bets, the median shorts for each universe vary quite dramatically between 18 and 66 percent. The median longs also vary substantially between 113 to 159 percent.

Table 8
Summary Statistics of Naïve Portfolio Bets
LC=Large Cap, SC=Small Cap, MO=Market-Oriented, G=Growth, V=Value.

	Shorts			Longs		
Universe	10th Pctl	50th Pctl	90th Pctl	10th Pctl	50th Pctl	90th Pctl
LC MO	-34%	-28%	-17%	116%	122%	128%
SC MO	-68%	-63%	-54%	149%	159%	166%
LC G	-26%	-18%	-13%	108%	113%	119%
SC G	-66%	-61%	-55%	147%	155%	162%
LC V	-39%	-31%	-22%	118%	124%	131%
SC V	-69%	-66%	-59%	151%	159%	164%

Manager holdings data is received quarterly, but manager returns data incorporates a multitude of trades during the quarter. Therefore, when we reconstruct manager holdings to create Enhanced or Naïve portfolios, they are quarterly buy-and-hold portfolios without intra-quarter trading. Comparing actual manager returns with buy-and-hold returns would be inappropriate. To adjust for the lack of intra-quarter trading, we create buy-and-hold Original portfolios from the manager quarterly holdings. These Original portfolios give an approximation of the true performance of the manager facing a long-only constraint and tracking error limits, but will vary from the actual reported returns. In evaluating the performance of Original, Enhanced, and Naïve portfolios, we are mostly concerned with incremental differences as a proxy for what might be possible, not a report of actual manager performance.

The Proof Of the Pudding Is In The Eating

So what happens when we implement our educated and naïve guesses to remove long-only constraints? Our goal is to improve manager performance by loosening constraints. However, for manager performance to be improved, the manager must have skill, opportunity, and an accommodating market environment in choosing what to buy and what not to buy. By employing our Enhanced and Naïve portfolios, we hope to discover where the best opportunities are for employing skill and receiving some luck.

In searching for skill, our first stop is at the Buy ranks. Russell manager research has identified top managers within investment styles and mandates. These top managers constitute our Buy category and all others the All Other category. In looking at simple quarterly averages, the Buy managers show promise. In the following figures, we demonstrate the increase in average quarterly excess return from both the Enhanced and Naïve portfolios over the Original portfolios. In Figure 1, we observe that Buy managers get the largest boost from our bet expansion schemes. Indeed, by eliminating benchmark neutral bets, and expanding intentional bets, Buy rank managers demonstrate their stock selection skill.

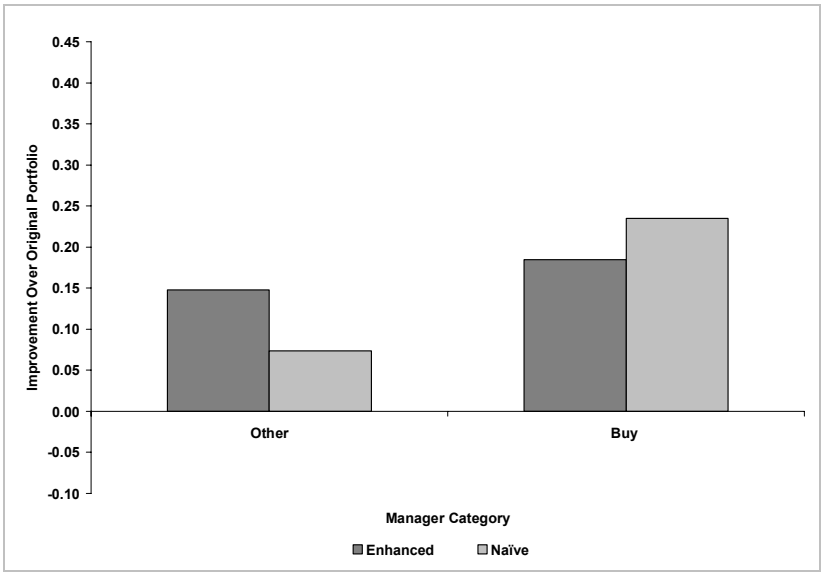

Figure 1
Comparison of the Benefits of Bet Expansion by Rank. The vertical axis is the increase in average quarterly excess return.

But skill is only part of the story, opportunity must also knock. What environments provide managers with the best opportunities to exhibit and benefit from their skill? Market efficiency is the greatest impediment to exhibiting skill, so we expect managers in the less efficient Small cap portion of the market to benefit from their skill to a higher degree than those in the Large cap area. In Figure 2, we separate out Small cap from Large cap and find that (a), the opportunities are greater in Small cap; (b) Buy ranks benefit more from the bet expansion schema; and (c) the Naïve methodology is quite risky, whereas the Enhanced methodology is rather neutral, for Large cap. Indeed, Buy ranks exhibit more skill in stock picking, but such skill may not be exploitable in the Large cap portion of the market.

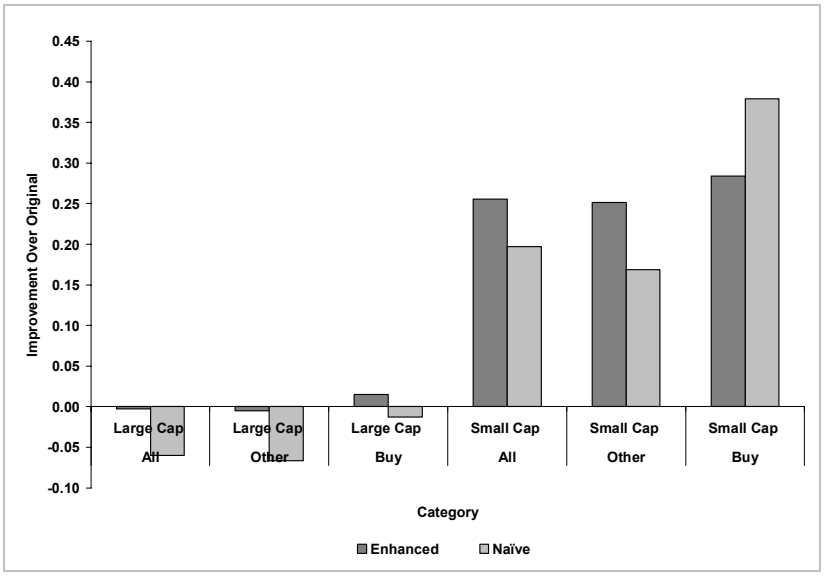

Figure 2
Comparison of the Benefits of Bet Expansion by Rank and Cap Size

So far we have observed that Small cap and Buy ranked managers show the most promise for bet expansion. In Figures 3 and 4, we divide our universe along two additional dimensions; risk-tolerance level and market environment. Risk-tolerance is our old friend, the sum of absolute bets. This summation is the same manager-based indicator we use to enhance bets in our educated guess scenario. In Figure 3, we observe that managers with High and Average tolerance respond well to our Enhanced strategy, while only High tolerance managers respond well to the Naïve strategy.

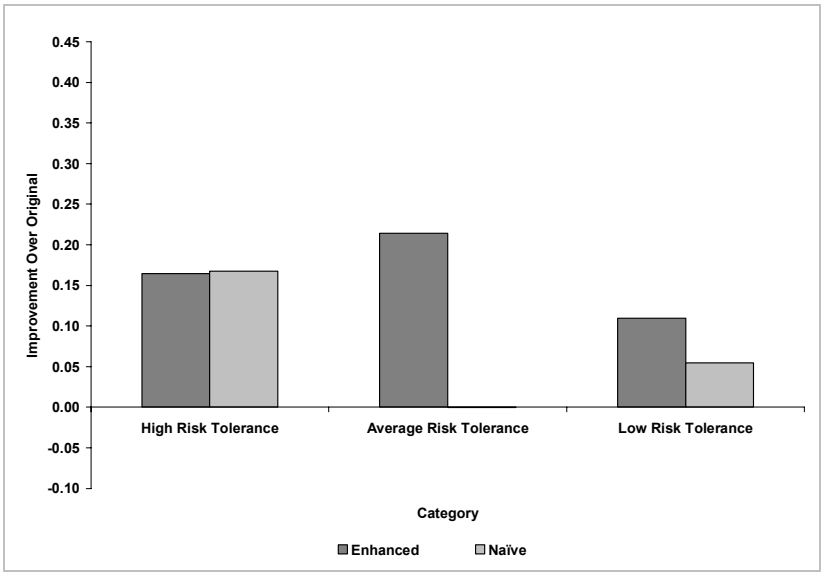

Figure 3
Comparison of the Benefits of Bet Expansion for High, Average and Low Risk-Tolerance Managers

In Figure 4, we evaluate the ability of managers to navigate forecasting signals during periods of Low and High cross-sectional volatility. Prior to the third quarter of 1998, we were in a period of Low cross-sectional volatility. Post third quarter 1998, we experienced High cross-sectional volatility. During periods of Low cross-sectional volatility, all managers exhibit higher excess return. In our companion piece, we showed that when forecast signals are less clear, managers will pull in their bets. Given the result observed in Figure 4, this behavior is appropriate. Ultimately, skill and opportunity get a boost from a favorable market environment when cross-sectional volatility is low.

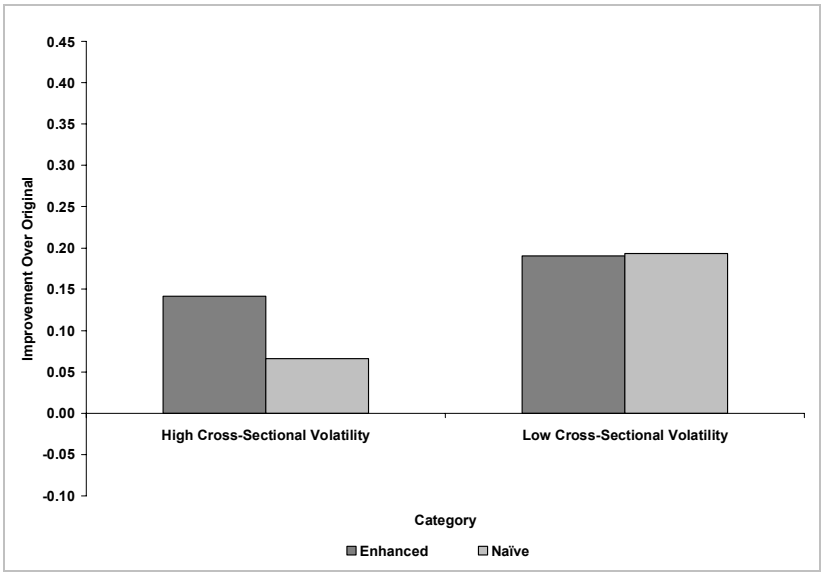

Figure 4
Comparison of the Benefits of Bet Expansion During Periods of High and Low Cross-Sectional Volatility

With all these permutations of our manager sample, we know that cap size is our most important clue regarding which managers will benefit the most from loosening constraints. We also know that a low cross-sectional volatility environment, recognized skill, and higher risk-tolerance will also help. Pulling all these ideas together, in the next section we isolate the managers with the most potential for improving the risk/return tradeoff for unconstrained portfolios.

La Crème de la Crème

In perusing Figures 1 through 4, the consistent improvement in excess return as a result of our educated guesses, the Enhanced methodology, is apparent. While the more Naïve methodology has several instances of tremendous improvement, it also exhibits huge volatility. Therefore, in comparing a simple bet expansion approach to more sophisticated, theory-driven approach, we find that theory-driven is better. By carefully considering manager behavior, we get a far better picture of what might happen if we gave managers more leeway.

Although our reported excess returns are quarterly buy-and-hold strategies, therefore not reflecting the true return or prospective return of the managers in our universe, we believe the relative magnitudes of various permutations are consistent. For example, we present the distribution of excess returns and information ratios for our managers using the Enhanced methodology divided by rank, cap size, and risk-tolerance level in Figures 5 and 6. The distributions are ordered from the highest to the lowest median excess return. From Figures 5 and 6 we see that the highest excess returns and information ratios are indeed Buy ranked, Small cap, Average and High risk-tolerance managers. However, the more telling news is that all Small cap break-outs dominate Large cap uniformly. The Buy ranks have generally higher information ratios. Indeed, the less efficient market opportunities in Small cap are fertile ground for finding and enhancing excess returns.[12]

[12]This result is consistent with Christopherson, Ding, and Greenwood (2001), Greenwood (1999), and Ross (2003).

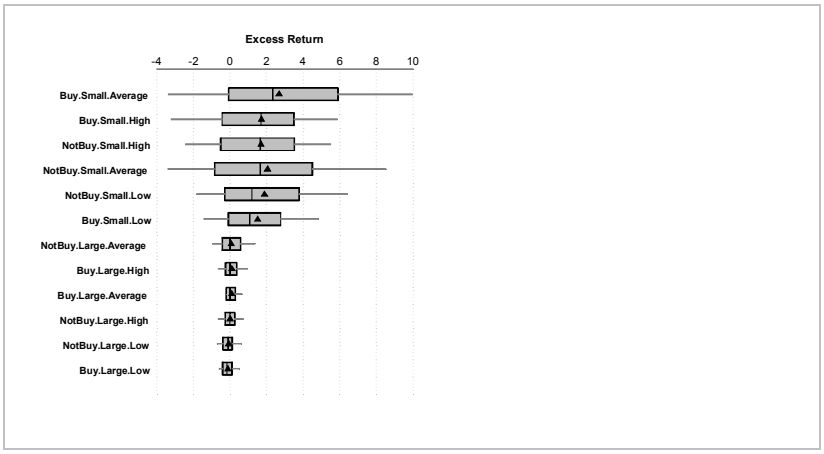

Figure 5
Quartile charts of excess return for managers, grouped by rank, cap size, and risk-tolerance, and then ordered by median. Means are denoted by triangles, the endpoints of the lines denote minima and maxima, the outer sides of the rectangle denote the first and third quartiles, the line inside the rectangle denotes the median.

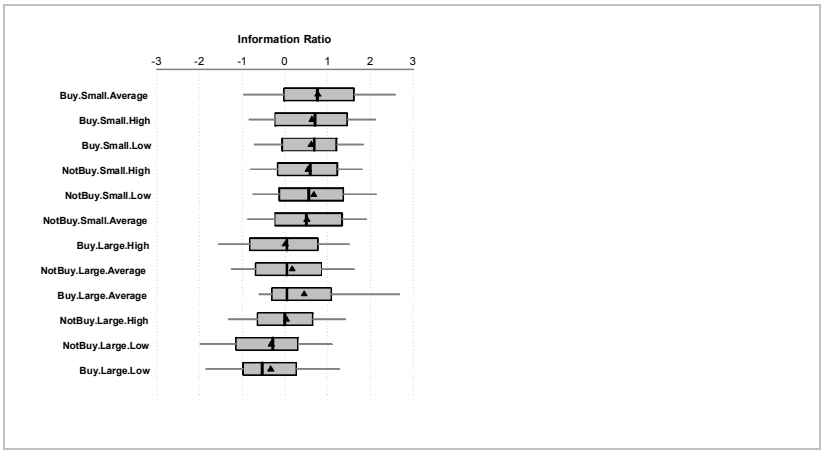

Figure 6
Quartile charts of information ratio for managers, grouped by rank, cap size, and risk-tolerance, and then ordered by median. Means are denoted by triangles, the endpoints of the lines denote minima and maxima, the outer sides of the rectangle denote the first and third quartiles, the line inside the rectangle denotes the median.

In addition to distribution analysis, we want to know what happens to the risk/return relationship when we modify bets. In Table 9, we demonstrate the increase in the level of return for a given level of risk when we use our best ideas from the above analysis. Such an increase indicates a more efficient tradeoff between excess return and tracking error. The Buy ranks with Average and High risk-tolerance show the greatest increase in risk/return space. Contrasting earlier exhibits, the Buy rank, Large cap managers show the greatest marginal benefit in risk/return space from loosening the long-only constraint. The Buy rank, Large cap, Average risk-tolerance slope increases by some 82 percent, though still does not register as significant. The Buy rank, Small cap, Average risk-tolerance slope is the steepest at 0.459 and reinforces the advantage of opportunities in less efficient areas of the market. Finally, All Other ranks, Large cap slopes actually get worse from Enhancing the high-conviction bets.

Table 9
Regression Coefficients of Tracking Error on Excess Return under Enhanced Methodology and Percent Difference from Original Portfolio

Rank	Cap	Risk-tolerance	Slope†	Slope Increase
Return Per Risk Level Improves from Enhancement				
Buy	Large	Average	0.074	82%
Buy	Large	High	**0.229**	23%
Buy	Small	High	**0.237**	14%
Buy	Small	Average	**0.459**	7%
All Other	Small	High	**0.236**	3%
All Other	Small	Low	**0.346**	2%
All Other	Small	Average	**0.277**	2%
Return Per Risk Level Deteriorates from Enhancement				
Buy	Large	Low	-0.098	-2%
Buy	Small	Low	**0.304**	-8%
All Other	Large	Low	-0.015	-24%
All Other	Large	High	0.005	-35%
All Other	Large	Average	0.002	-92%

†Bold indicates a slope that is significantly different from zero at the 99% level.

On a Practical Note

Finally, we evaluate the impact of our two enhancement schema on portfolio turnover. Many a good idea is spoiled by poor execution. Once again, we observe a distinct advantage to the theory-driven methodology over the naïve. While expanding bets increases portfolio turnover under the Enhanced methodology some 80-100 percent, expanding bets under the Naïve methodology increases turnover four to six times. Again, we cannot say how much turnover happens or would happen between the quarter end reporting dates. However, the probability that the Naïve expansion would cause an excess of turnover is very real.

Table 10
Turnover Numbers[13]
LC=Large Cap, SC=Small Cap, MO=Market-Oriented, G=Growth, V=Value.

	Holdings				Turnover			
Universe	Actual Portfolio		Original Portfolio		Enhanced Portfolio		Naïve Portfolio	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
LC MO	97	78	0.607	0.262	1.049	0.390	2.260	0.314
SC MO	188	230	0.510	0.218	1.075	0.291	3.106	0.246
LC G	64	51	0.608	0.249	1.001	0.356	2.068	0.305
SC G	91	54	0.496	0.157	1.125	0.264	3.172	0.231
LC V	73	50	0.518	0.206	1.038	0.332	2.414	0.321
SC V	123	145	0.461	0.181	1.089	0.262	3.217	0.247

[13]These numbers represent quarterly turnover. Turnover is defined as the sum of the absolute values of differences in monthly holdings. These numbers will be overstated given security growth, etc. However, all numbers should (on average) be equally overstated. For an estimate of turnover costs, see Gardner (2004).

CONCLUSIONS

The ability of managers to produce excess returns is compromised in the face of a long-only constraint. We began our study with a review of a theoretical model of optimal portfolio construction. From that model we discovered that security weights are influenced by manager risk-tolerance, security level volatility, manager skill, and the clarity of forecast signals. Where these findings were ambiguous, we looked to simulation and manager holdings analysis to solidify our understanding of manager preferences. And where theoretical findings were unambiguous, we looked to manager holdings analysis to validate the model. Ultimately, we learned what will constrain a manager from implementing their desired weight on a security under the long-only constraint.

Armed with these findings and some practical knowledge of manager behavior, we sought to reshape manager portfolios as if they had the ability to short stocks they dislike and lever up stocks they do like. From these reconstructed portfolios we learn several important things:

1. On average, managers are better at avoiding bad stocks than at picking good ones.
2. By creating high-conviction portfolios, we find that skilled managers, with an appetite for risk, searching in the small cap area for securities, will benefit the most from loosening the long-only constraint. Moreover, all managers benefit more when cross-sectional volatility is lower.
3. Using a theory-driven approach to create high-conviction portfolios is superior to a naïve approach. Simply choosing the largest positions and expanding might result in superior performance but might also fail miserably. Indeed, by utilizing our

> theoretical findings, we have more consistent improvements. Additionally, we find that security level turnover for the theory-driven, high-conviction portfolios is less than half of what we might observe in the case of a naïvely constructed, high-conviction portfolio.

Given our ability to improve manager returns with limited knowledge of their preferences bodes well for what they might do on their own. Loosening the constraints on long-only portfolios has the potential to dramatically improve excess returns and even the trade-off between excess return and tracking error. These managers have talent, but that talent has long been obscured by intense benchmark sensitivity and the fear of uncovered short positions. By taking a conservative stance on risks we do not understand well, we prevent our managers from improving their total risk profile and from achieving their full potential.

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