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PCA Research Brief:

A Review of Developing Managers and Developing Manager Programs

PENSION CONSULTING ALLIANCE, INC.

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A Review of Developing Managers and Developing Manager Programs

"Attractive investment management organizations encourage decisions directed toward creating investment returns, not toward generating fee income for the manager. Such principal-oriented advisers tend to be small, entrepreneurial, and independent."

David F. Swenson, Yale CIO, in Pioneering Portfolio Management

Introduction

There exists a portion of the investment manager universe that has been left relatively untapped by large institutional investors. This tiny slice of the gigantic $13.5 trillion dollar industry is comprised of small or new, i.e., *developing* investment management firms, pursuing a myriad of strategies across a number of investment classes but that have relatively small amounts of assets under management. Many of the firms are populated by talented, highly educated individuals who have developed their skill while working at some of the best, most well respected financial institutions in the world. Many of these men and women possess innovative strategies; have strong performance records, and most of all, possess an entrepreneurial spirit that keeps them on the path to excellence. At the same time, their firms are unencumbered by many of the administrative burdens that often accompany mature and large financial organizations. They are operationally sound and typically employee owned.

Large institutional investors have, in most instances, ignored this talent pool for a variety of reasons, such as minimum account size, years of track record and depth of staff, although there is no empirical evidence to support of such beliefs. In fact, in addition to a number of academic papers supporting the notion that developing firms offer a distinct performance advantage, when it comes to US equity strategies; our research finds that *there is no broad-based difference between the risk adjusted performance of developing U.S. equity firms and their mainline counterparts*. That is, developing firms have the same potential to deliver significant risk adjusted performance as mainline firms.

The purpose of this paper is to examine the US equity marketplace to determine whether an allocation to small and/or new investment management firms would add incremental value to an active equity portfolio and, if so, what strategies might be appropriate

Surveys find that interest in active management typically occurs during a bear market. And, we find ourselves in just such a period. The equity markets have turned in negative performance for three straight calendar years. Given the general loss of confidence in the capital markets, and a host of unknowns as a result of global geopolitical instability, it is not likely that the stock markets will return to the heady heights of the roaring 1990's any time soon. Consequently, foundations, endowments and pension plan sponsors are facing shrinking pools of assets, diminishing returns and growing funding problems. According to a study published by Greenwich Associates in early this year, "the last three years have been the most destructive in the whole history of the U.S. Fund business, with some 1,700 corporate, public and endowments losing just over $1 trillion." Given these disturbing statistics, investors are looking for ways to enhance fund performance. The Greenwich report tells us that "most funds, public and endowment as well as corporate, are aiming to raise returns by making small but significant shifts in asset allocations and investment management." A shift to active

management and the interest in exploring opportunities with smaller, more entrepreneurial U.S. equity firms is indicative of trends within the industry.

Concepts and Definitions

When you ask public pension plans sponsors about *small* firms, most talk about the kinds of firms they do not use. The problem for many is size and the desire to have a manageable number of investment managers that can have a meaningful impact upon total fund performance. Because of their smaller total firm assets under management, small firms are routinely excluded from management searches conducted by large plan sponsors. Other reasons cited for not using small firms include:

- There is no such thing as a small firm advantage especially in the large cap area. The only exception might be in hedge funds. If it exists in other U.S. equity strategies, it would be in small or mid-cap high turnover portfolios.

- The resources required to identify small firms with superior performance is labor intensive. Multi-billion dollar plans and their consultants are not setup to handle this task.

- Fiduciary standards will have to be relaxed.

- Small firms do not perform as well as large firms—that is the reason that they stay small. That is, good performance is directly tied to the growth in assets and the growth of the firm.

- High business risk, e.g., lack of capital, limited risk management techniques, limited back office, and key-person or lone-man risk.

But, what is small? Like many investment related concepts, there is no general agreement. When PCA asked this survey question, the answers ranged from zero dollars, i.e., a start-up, to $6 billion assets under management.

It appears that *small* is relative—it depends upon who is being asked and how the concept fits into a particular strategy. For example, $4 billion might be too small when thinking about a large cap core equity portfolio. But, $4 billion might be too large for a small cap equity strategy, where the optimum size could be less than $1 billion.

What is a developing firm? The American Heritage Dictionary of the English Language provides some insight by offering the following definition of "developing:"

> *To bring from latency toward fulfillment; to expand or enlarge; to cause gradually to acquire a specific function, role or form.*

In the plan sponsor community, it is generally accepted that the terms "emerging manager" or "emerging firm," are offshoots of the term, "emerging" markets. PCA finds the term "emerging" almost pejorative and chooses to use the term "developing" instead. A painstaking search of the literature uncovered very little about the characteristics of emerging or developing investment management firms, other than as related to affirmative action.

Our research and survey interviews with plan sponsors, investment managers and

investment consultants uncovered some interesting perceptions about these firms. The range of responses varied greatly and the definition always included two or more of the following characteristics:

Small/Developing Investment Management Firms

Characteristic	Range of Responses		
Assets Under Management	$0	→	$6 B
Track Record	0 Years	→	5 Years
Number of Products	1	→	3
Number of Clients	0	→	15
Number of Institutional Clients	0	→	1 or more
Number of Staff	2	→	10
Ownership Structure*	20%	→	100%
Percent Owned by Women	20%	→	51%
Percent Owned by Minorities	20%	→	51%

*Percent of employee ownership

Source: 2003 PCA Survey

Since working definitions are critical to understanding the rest of this paper, we have exercised our prerogative to throw out, both terms, "small" and "emerging", and to use the following terms to describe the entire investment manager universe:

Developing manager (or management firm) refers to *any* investment management firm with less than $2 billion under management.

Mainline manager (or management firm) refers to *any* investment management firm with more than $2 billion under management

We know that some will disagree with the simplicity of the definitions but this clean bifurcation makes the ensuing discussion much easier to grasp.

The Universe and Marketplace

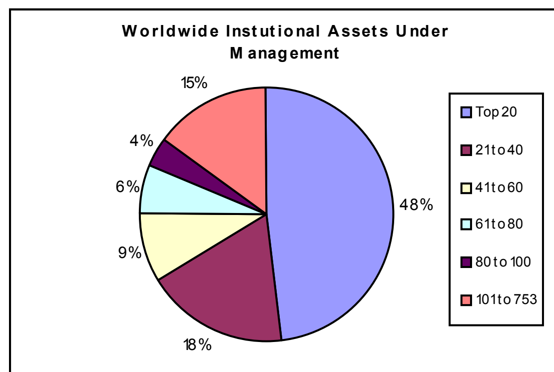
The May 27, 2002 issue of *Pensions and Investments* (*P&I*) provides an interesting picture of the investment management industry. Ranking 753 firms by assets under management, and covering the full range of asset classes, the *P&I* Report reveals a story of asset concentration that is not surprising:

- *The top 20 of these mega-firms provide multiple products and control 48% of worldwide institutional assets*

- *One hundred (100) mega-firms control 85% of worldwide institutional assets*

Source: P&I, May 27, 2002

The remaining 15% of the $13.5 trillion in worldwide institutional assets is managed by



firms with assets ranging from $25,023 billion to $1 million.

- 256 of these firms have assets between $25,023 billion and $2 billion
  - 13 are owned by women or minorities

- 397 of these firms have less than $2 billion under management
  - 61 of these firms are owned by women or minorities
  - 50 of the women/minority firms offer about 90 equity products

Developing Firms

While it is difficult to ascertain from the *P&I* list exactly how many of the 397 developing firms offer equity products, a reasonable guess might be 50%, or about 200 firms. The impreciseness of these numbers reflects the problem of clearly defining the developing investment manager universe. In short, it is very difficult to obtain a comprehensive list.

Those whose business strategy focuses just on this segment of the universe maintain the most complete sources of information about developing investment management firms. These firms, e.g., the fund-of-funds, the manager-of-managers, and the specialty consultants (those focusing on the developing firm universe), routinely scour the industry, follow up on leads and encourage new market entrants to submit profiles and furnish regular updates.

P&I, a publication with great power and resources, covers 753 firms, including developing firms. The public databases maintained by firms such as Investor Force, Mobius, or Nelsons are extraordinarily robust, but none can claim to have the definitive list of developing firms. By comparison, the proprietary databases maintained by developing firm specialists, e.g., Progress Trust, FIS, Gray and Company, and Northern Trust each claim to include as many as 1,000 firms across a variety of asset classes that fit the profile.

Regardless of the actual number of developing firms, the simple fact that the 85% of worldwide institutional assets and 83% of all U.S. tax-exempt institutional assets are managed by 100 mega-firms is at once interesting and alarming. In view of the public funds' penchant for similar asset allocation strategies and using the same investment management firms, it should not be amazing that the largest 78 state funds lost more than $240 billion over the last 3 years. So, now might be an opportune time to examine the potential of developing firms. Perhaps they will offer some potential above that which is not achievable from the mainline.

Types of Programs

In an effort to find out what types of developing programs exist within the plan sponsor community, we conducted telephone interviews with 15 plan sponsors. Five plan sponsors do not have formalized programs; but four of these have strategies to insure that their searches include representatives from the entire universe of potential management firms. The remaining 10 have formal programs that possess some combination of the following characteristics provided in the chart on the next page:

Description of Developing Manager Programs

(based on PCA's Survey of 15 Plan Sponsors)

Category	Program Features/Characteristic	Response	Comments
Objectives	Add value versus mainline managers Social/economic/targeted exposure only Fiduciary-oriented	100% 20% 100%	40% targeted only small firms, but expected MBE/WBE firms to be included 80% use small as at least one criteria
Descriptive	Programs initiated in the 1990's Plan sponsor has more than one program	100% 30%	All started between 1990 and 1997 One plan sponsor has two programs: an externally managed program for firms with less than $500 million under management; plus an internally managed program for minority an women owned firms with more than $500 million under management.
Implementation	Allocation to public equity and fixed income Allocation to private equity included Use multiple asset classes and styles Use services of more than 5 separate investment management firms Targets firms owned by ethnic minorities only Targets ethnic minority and women-owned firms Targets the disabled Targets small firms Targets local or regional firms Allocates/targets a percentage of total assets to the program Program has separate policy statement Includes the concept of "graduation"	100% 30% 100% 100% 30% 70% 10% 80% 40% 50% 60% 70%	No program has an allocation to just one asset class. This goal is often understood but unwritten. The most common spoken target was 15%. It should be noted that the targeted amounts is not generally considered a set-aside. Others simply allocate a specific dollar amount to the program. One plan sponsor that targets minority firms includes them into the mainstream at the time that the firm is retained.
Delegation	Managed internally (partially or totally) Managed externally (partially or totally) Use outside consultant Use manager or manager firm(s)	40% 70% 70% 70%	

Source: 2003 PCA Survey

To Do Good and To Do Well

All responses from those interviewed began with an underlying assumption that the primary goals are fiduciary and financial—that the programs are implemented in ways that do not jeopardize the Trustee's fiduciary duties. However, without exception the surveyed programs clearly intend to provide collateral benefits to groups of people, geographical areas and or sectors of the economy.

In one example, one corporate plan sponsor stated emphatically that theirs is not a program but an investment strategy. It started as a company wide initiative in 1995 by looking at diversity within the company and deciding they would close the gap that existed between their employees, their service providers, their customers, and the communities in which they did business. The result of the initiative is a desire to increase the level of spending with minorities and women vendors and suppliers. The investment strategy is an offshoot of the larger company policy. The plan sponsor states that this strategy of utilizing the services of small minority and women owned investment management firms continues to add value to the portfolio. Along these same lines, the two most common responses are summarized below:

- There exists a universe of management firms that are in the early stages of their development or that have not reached an asset size that inhibits agility. Many of these managers have innovative strategies, repeatable processes, experienced staff, track records and competitive risk adjusted performance numbers but have yet to be recognized. Traditional searches fail to uncover them because most manage asset sizes that are well below the radar of large institutional investors. Developing manager programs provide a vehicle for getting exposure to a part of the market that large plan sponsors often miss, as well as an opportunity to identify promising firms early in their evolution.

- Minorities and women are not adequately represented in the investment industry. Given the demographics of the U.S. population, (51% female and 25% non-white) which are reflected in constituencies of many public plans, it is only appropriate that these individuals be given an opportunity to manage fund assets. Using developing management firms provide an opportunity to broaden manager diversification while achieving competitive returns.

Judging Success

The responses regarding the experience with developing manager programs also provides insight.

Satisfaction in Comparison to Mainline Firms

	Dissatisfied	Satisfied	Very Satisfied
Performance	0	6	4
Level of Firm Turnover	0	10	0
Degree of Firm Stability	0	10	0
Other Organizational Issues	0	10	0
Degree of Satisfaction with Overall Program	0	6	4

Source: 2003 PCA Survey

On average, all plan sponsors were satisfied with the results of their developing manager program. However, several did say that a

few firms in their programs had gotten off to a slow start (performance-wise) but that over time, performance had improved. Some respondents specifically stated that while the performance results are mixed, this is the same as one would expect to achieve with mainline firms.

When asked about the firm turnover, programs that are internally managed by plan sponsor staff have about the same turnover rate as the mainline program. Programs that are externally managed by outside firms, i.e., manager-of-managers or fund-of-funds, seem to have a higher turnover rate. This may be attributed to the fact that these firms do not have as many restrictions. For example, if an investment management firm fails to meet its objectives for three consecutive quarters, the manager-of-managers could terminate the contract and fill the mandate with a replacement within a matter of weeks instead of months.

When asked what they would do differently if given the opportunity, several public plan sponsors specifically highlighted the cumbersome nature of their administrative processes as an impediment to running a successful program. For example, many would like to have the flexibility to retain or terminate without going through an arduous procurement process as mandated by many public entities. They believe that this would provide them with the opportunity to identify promising strategies and add them to the portfolio without having to go through a drawn-out process. For example, one plan sponsor cited an incident involving a firm with great performance and a promising strategy. However, the only way to retain the firm is to do a full-blown search just to get to this one firm. We believe that it is safe to say that all those interviewed would agree that the key to a successful program is flexibility. The program must be designed so that firms can be accessed with the least amount of bureaucracy.

Analysis of Developing Manager Results

Up to this point, this report has discussed the rationale and perspective on plan sponsors' interest in developing firms. This section is intended to provide some "meat to the bones" by discussing and comparing recent actual investment performance results of the developing manager universe with those of their "mainline" (i.e., longer established / larger scale) peers. We begin this section by highlighting the intuition behind utilizing developing firms and some of the research that supports this intuition. We then assess the investment performance of developing managers.

There have been a handful of academic articles that have reviewed the merits of maintaining firm size at modest, rather mega-size, levels (see references). The general conclusions of the articles are as follows:

- As a firm's assets grow, it becomes more difficult to implement (trade) new ideas into a portfolio. Smaller firms are more nimble traders, allowing for easier and more rapid implementation of added value ideas.

- Asset-based fee schedules force conflict of interest issues into the investment management practice. Under asset-based fees, managers are motivated to grow an asset base and maintain asset exposure, rather than grow the dollar amount of added value.

- Value-based strategies are more amenable to asset growth than momentum-based (growth) strategies. This result is intuitive when one considers the trading processes associated with both types of firms – value-based strategies tend to exhibit lower turnover, while momentum-based strategies exhibit higher turnover.

The research has been largely theoretical. Empirical studies of the difference in investment performance between larger (mainline) and smaller (developing) firms are virtually non-existent. There is some empirical research produced by vendors of developing manager fund-of-fund products, but this research largely analyzes the results of "top quartile" or "top ranked" developing managers. This research assumes some level of manager selection ability rather than providing an unbiased look at historical results.

Assuming the theoretical points above are valid, one would expect to find that (i) developing managers produce investment returns that are on average higher than their mainline counterparts, (ii) developing manager risks are not significantly different from those of the mainline counterparts. If (i) and (ii) are true, then developing managers should, on average, be able to produce risk-adjusted returns that are an improvement over their mainline counterparts.

Performance Analysis of Developing Firms

The following analysis is limited in that we analyzed only current universe data. As a result, "survivorship bias" was not accounted for. What is meant by survivorship bias is that any study that uses only data from current participants, by default, excludes those participants from prior periods that did not "survive" until the latest period. For example, a firm might have been created five years ago, but only lasted for three years. That firm is not included when using historical data from only current managers – thus, survivorship bias exists. In the investment industry, standard universes do not account for survivorship bias.

To get some feel for the extent of the survivorship bias, one can look at the backward looking "attrition rate" of an existing universe sample. An attrition rate is the rate at which the observations in a sample decline as one extends back in time. For example, in a current universe sample, there might be 200 participants with one year of data, but only 100 participants with three years of data. In this case, the move from looking at firms with one year of history to firms with three years of history has an attrition rate of 50%. The higher the attrition rate, the more likely that survivorship bias is evident in the universe. Interestingly, the differential attrition rates in among the sample sizes (as the length of track record is extended) between the mainline firms universes and developing firms universes may provide some indication of survivorship bias. Survivorship bias itself, however, still does not account for those developing managers that successfully "graduate" into the mainline universes. Successful developing firms will disappear from a developing manager universe just like unsuccessful developing firms will – it is important to recognize that survivorship, itself, makes no distinction between successful and unsuccessful firms.

Another caveat is that our analysis is period specific. We analyzed performance only over the last five years. The last five years (1998-2002) are useful in that they provide a full, volatile, and very polar investment cycle. However, it is only one five-year period.

We analyzed only domestic equity managers, segmented out by the standard investment styles (large core, large growth, large value, small growth, small value). In addition, our definition of a small developing firm includes firms with up to $2 billion in firm assets under management as of 12/31/02 and then, in hindsight, measures their investment results. A more sophisticated approach would be to determine what a developing firm is *today* and then measure their results going forward.

Given these caveats, PCA created universe samples using the above definition. For each domestic equity mandate, the number of firms included appears as follows:

Sample Domestic Equity Style Universe Sizes—Developing & Mainline Managers

		Firms with Track Record of Length:			
Style/Mandate	**Universe Sample**	**1 Year**	**3 Years**	**5 Years**	**Attrition Rate**
Large Core	Mainline	370	340	299	19%
	Developing	87	66	53	39%
Large Growth	Mainline	271	242	192	29%
	Developing	57	51	41	28%
Large Value	Mainline	307	279	227	26%
	Developing	36	24	20	44%
Small Growth	Mainline	84	79	66	21%
	Developing	47	35	28	40%
Small Value	Mainline	85	81	68	20%
	Developing	39	32	23	41%

Source: PCA, Nelsons, InvestorForce

Across all mandates, the number of mainline managers is larger than the number of developing managers. This may reflect, based on anecdotal information, the fact that many developing firms simply do not have the resources (or the interest) to submit their information to the database providers we utilized. Still, the attrition rates prove interesting: as the track record requirement lengthens, for nearly all mandates developing firms disappear at a rate that is twice that of the mainline firms (the exception is the Large Growth mandate where the attrition rates are equivalent). Reasons for these rate differentials may be (i) "graduation" to the mainline level, (ii) exiting the business, or (iii) consolidation.

To compare the two sets of universes (developing and mainline), PCA performed a few basic analyses to determine if their investment results were, in fact, different. For each mandate we produced return and risk scatter charts. This type of chart shows the relation of a portfolio's return compared to the amount of risk it took on to achieve that return. These charts were prepared for one-year, three-year, and five-year periods. The scatter charts provide a graphic and intuitive indication of the spread of the combined investment returns and risks associated with both types of managers. Each dot on a chart represents a specific portfolio. Darker dots represent mainline managers, lighter dots developing managers. Each dot is located based on its historical investment return and risk, depending on the period measured. Annualized investment return is measured on the vertical axis, risk (annualized standard deviation of monthly returns) on the horizontal axis. Dots located in the upper left are best because they produced higher returns with lower risk. Dots in the lower right are worse because they produced lower returns with higher risk.

We also compared investment returns and investment risks separately to determine if there were any significant differences between the two types of managers. In addition, we reviewed the shape of these distributions to explore whether there might be any potential for incremental "surprise risk" associated with retaining developing rather than mainline investment managers. Distributions of returns

can take a variety of shapes and forms. However, the most accepted distribution shape is the "normal distribution." A normal distribution (or bell curve) is attractive because it lends itself to many attractive statistical procedures, such as developing levels of confidence from the analysis of samples of data (like investment returns). A key assumption behind the normal distribution is that the data is random. If the data takes on a non-normal distribution shape, then there may be underlying non-random influences on the data. Two common forms of non-normal distributions are "skewed" and "high kurtosis" distributions. Skewed distributions are not symmetric (like the bell curve), but tilted in one direction. High-kurtosis distributions exhibit "fat tails," or outlying observations that would not be expected to occur under a normal distribution.

General Findings

The general conclusion from these studies is that there is no broad-based difference in investment performance or investment risk between developing and mainline managers. As theory would indicate, where there were differences, they tended to exhibit developing managers in marginally favorable positions versus their mainline counterparts.

Surprise Risk Findings

One issue surrounding the developing managers is whether the distributions of developing managers' returns and risks are significantly different from those of their mainline counterparts. If the distributions of returns and risks of developing managers are tilted more in one direction or the other (skewness), or are dominated by extreme outcomes (kurtosis), then such findings might indicate a potential form of "surprise risk" associated with hiring developing managers.

Across the investment styles and periods studied, PCA found that, on average, the distributions of developing managers' returns were more often normally distributed than their mainline counterparts (see tables below).

Table 1 – Skewness and Kurtosis of Annualized Returns – Mainline Managers

Skewness	1-Year	3-Year	5-Year
Core	Positive Skew	No Skew	Positive Skew
LG	Positive Skew	Positive Skew	Positive Skew
LV	Positive Skew	No Skew	Positive Skew
SG	No Skew	No Skew	Positive Skew
SV	Negative Skew	Negative Skew	Positive Skew

Kurtosis	1-Year	3-Year	5-Year
Core	Long Tails	No Tails	Long Tails
LG	Long Tails	No Tails	Long Tails
LV	Long Tails	No Tails	Long Tails
SG	No Tails	No Tails	Long Tails
SV	Long Tails	Long Tails	Long Tails

Table 2 – Skewness and Kurtosis of Annualized Returns – Developing Managers

Skewness	1-Year	3-Year	5-Year
Core	Positive Skew	Positive Skew	Positive Skew
LG	No Skew	No Skew	Negative Skew
LV	Positive Skew	Positive Skew	Positive Skew
SG	No Skew	No Skew	No Skew
SV	No Skew	No Skew	No Skew

Kurtosis	1-Year	3-Year	5-Year
Core	Long Tails	No Tails	No Tails
LG	No Tails	No Tails	No Tails
LV	Long Tails	No Tails	No Tails
SG	No Tails	No Tails	No Tails
SV	No Tails	No Tails	No Tails

*Skewness & Kurtosis tests for significance of 95% confidence level. "No skew" and "No tail" indicate that skewness and/or kurtosis measures were not significant, indicating that normal distribution could not be ruled out.

As the above tables highlight, the skewness (tilt of the distribution) and kurtosis (degree of outliers) of the developing managers' distributions occurred less frequently over the periods analyzed than with the mainline

managers. In only four of the fifteen mandate/ period scenarios were the returns of the mainline managers normally distributed. On the other hand, developing manager return distributions were normally distributed in eight of fifteen instances. In addition, only mainline managers exhibited instances of the unattractive combination of negative skewness and high kurtosis (both with respect to small value mandates).

The same analysis was conducted with the distributions of the managers' risks (see tables below).

Table 3 – Skewness and Kurtosis of Standard Deviation – Mainline Managers

Skewness	1-Year	3-Year	5-Year
Core	Positive Skew	Positive Skew	Positive Skew
LG	Positive Skew	Positive Skew	Positive Skew
LV	Positive Skew	Positive Skew	Positive Skew
SG	Positive Skew	No Skew	No Skew
SV	Positive Skew	Positive Skew	Positive Skew

Kurtosis	1-Year	3-Year	5-Year
Core	Long Tails	Long Tails	Long Tails
LG	Long Tails	No Tails	No Tails
LV	Long Tails	Long Tails	Long Tails
SG	Long Tails	No Tails	No Tails
SV	Long Tails	Long Tails	Long Tails

Table 4–Skewness and Kurtosis of Standard Deviation – Developing Managers

Skewness	1-Year	3-Year	5-Year
Core	Positive Skew	No Skew	No Skew
LG	No Skew	No Skew	No Skew
LV	Positive Skew	Positive Skew	No Skew
SG	Positive Skew	No Skew	No Skew
SV	No Skew	No Skew	Positive Skew

Kurtosis	1-Year	3-Year	5-Year
Core	No Tails	Long Tails	Long Tails
LG	Long Tails	Long Tails	No Tails
LV	Long Tails	Long Tails	No Tails
SG	Long Tails	Long Tails	No Tails
SV	No Tails	No Tails	No Tails

*Skewness & Kurtosis tests for significance of 95% confidence level. "No skew" and "No tail" indicate that skewness and/or kurtosis measures were not significant, indicating that normal distribution could not be ruled out.

Findings Related to Selected Mandates

Through the above analyses certain results became evident that may prove interesting and useful from a program development standpoint. The next several paragraphs discuss these findings.

No Significant Benefits Associated with Small Capitalization Mandates

Whether analyzing the distributions of returns or risks, there were no material differences between the two manager type samples within the small cap mandates. Analysis of the shapes of the distributions, however, favored the developing managers, indicating there was actually more "surprise risk" associated with retaining mainline small cap managers.

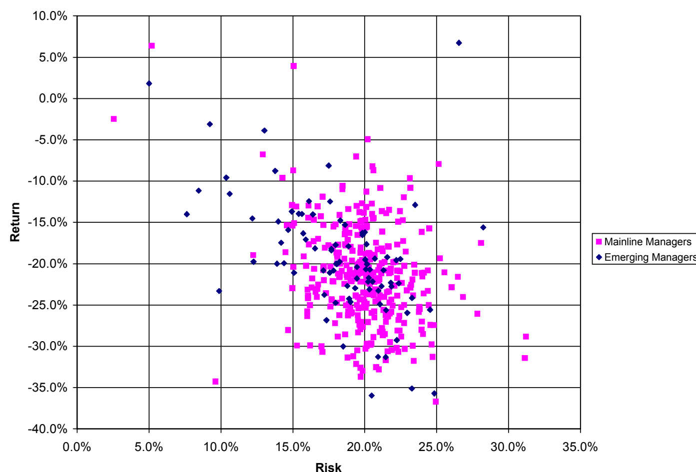
Significant Risk Adjusted Benefits Associated with Core-Oriented Mandates

As opposed to the Small Capitalization Mandates, there appears to be material differences between the two manager type samples within the Large Core universe.

As discussed earlier, risk-return scatter plots were constructed for each of the separate management styles (i.e. Large Core, Large Growth, etc.) across different periods. For example, as seen in the chart on the next page, Large Core (LC) Developing manager returns are displayed by the blue dots, while LC mainline managers are displayed with pink dots. LC developing managers are overlaid on top of the LC mainline

managers resulting in a snapshot of the risk-adjusted return for the 1-year period ending 12/31/02.

Comparison of Mainline and Developing Large Core Managers—1 Year Ending 12/31/02



The scatter plot diagram shows that the central point for both LC developing and LC mainline managers are positioned at approximately the same location. While the majority of cases are central, both samples show a few outliers. LC developing manager outliers tended to exhibit more return with less risk.

In addition to comparing the risk-adjusted returns between the two manager type samples, we also performed statistical analyses to determine the significance of the difference between the two samples for each period analyzed. For all three time periods, the LC developing manager universe had higher mean annualized returns. Differences in the mean (or average) return versus the LC mainline universe counterpart ranged from 1.6% (3-year) to 2.7% (5-Year). A similar study was conducted to compare risk between the two manager type samples over the same time periods. For 1- and 3-year periods, LC developing managers also exhibited lower mean risk with a difference of 1.8% and 0.7% respectively. For the 5-year period, both LC developing and LC mainline managers mean risk was equal.

To verify these findings, we sought to determine if whether we could say with a high degree of confidence that these mean differences for both annualized returns and standard deviations were statistically different. This determination was performed using "Two-Group T-tests." A t-test is typically used to determine whether the mean of a sample is significantly different from zero (the t-statistic is the mean of a sample of observations divided by the standard error of that sample's distribution). When a t-statistic is higher than 2, one can conclude with a high degree of confidence that the mean of the entire population is different than zero. The same procedure can be used to analyze the difference between the means of two samples – this procedure is the Two-Group T-test. Under the assumption of normal distributions, the mean and the distribution of one sample can be compared to the mean and distribution of another sample. This information is then used to calculate a t-statistic on the difference between the means and, in turn, develop a level of confidence that the difference in the means is non-zero, much in the same way that the single t-test is used to verify that one mean is not zero.

In the case of analyzing developing manager returns and mainline manager returns, a 95% confidence interval of the mean difference was calculated using the Two-Group T-test. If the confidence interval was higher than zero, the LC developing manager universe was found to have a higher mean that was statistically different with a 95% degree of confidence interval. Conversely, if the confidence interval was less than zero, the LC developing manager universe was found to have a mean return that was significantly less than LC mainline managers. If the 95% confidence interval crossed contained zero, the means were found to be statistically the same. LC developing managers, whose mean annualized returns in all three periods were higher than LC mainline managers, were found to be significantly different (higher) for both the 1 and 5-year periods. The result of the 3-year period was that the means were statistically equivalent.

In a similar fashion, the mean differences of the risks (standard deviations) were tested to see if they were statistically different. In this case, the 1-year mean standard deviation of the LC developing manager universe was found to be significantly different (lower) than that of the LC mainline manager universe. For both 3 and 5-year periods, the means were found to be statistically the same.

Finally, as described earlier, skewness and kurtosis statistics were also analyzed to determine any combinations of both a tilt in return distributions (skewness), and "fat tails" (kurtosis) existed. If so, such cases would signify that there may be some potential of "surprise risk" associated with either the LC developing or LC mainline manager universes. Overall, the LC mainline manager universe exhibited more instances of both distribution tilt and extreme outcomes. This occurred in two cases among LC mainline manager returns, and only one case in the LC developing manager universe. When analyzing the distribution of risk, the LC mainline manager universe exhibited three cases of this combination, while the LC developing manager universe exhibited none. These findings, while limited, provide interesting indications of the differences in event risk between the two types of managers.

In summary, these findings indicate that the LC developing manager universe may have exhibited a marginal advantage over the LC mainline manager universe in terms of potential risk-adjusted results. The LC developing manager universe provided slightly higher annualized returns over most periods with slightly better risk attributes. In addition, LC developing manager returns distributions tend to be more normally distributed with less "surprise risk" than that of their mainline counterparts.

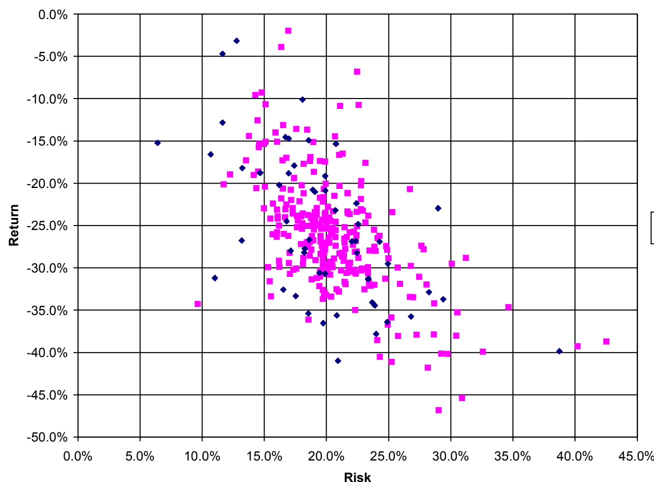
Significant Risk-Adjusted Benefits Associated with Large Growth Mandates

As with the Large Core universe, Large Growth (LG) developing managers exhibited some material differences from

their LG mainline counterparts.

In a similar fashion to the Large Core findings mentioned above, scatter diagrams for 1, 3, and 5-year periods were constructed displaying LG developing manager risk-adjusted returns and overlaying them on top of LG mainline manager risk-adjusted returns. As seen in the scatter diagram below, the mean 1-year risk adjusted returns for both LG developing and LG mainline managers tend to be concentrated in the same area while the LG developing manager returns appear to be more widely scattered than LG mainline managers.

Comparison of Mainline and Developing Large Growth Managers—1 Yr. Ending 12/31/02



In addition to the above mentioned scatter diagram, comparisons of mean annualized returns for the Large Growth universes were reviewed for 1, 3 and 5-year periods. Over the 1- and 5-year periods, LG developing managers had higher mean annualized returns by 0.9% and 1.4%, respectively. Over the 3-year period, LG developing managers mean annualized return was lower than LG mainline managers by 0.3%, with minus (16.7%) and minus (16.4%) returns, respectively.

Sample standard deviations were also reviewed. In all three time periods, LG developing managers mean standard deviations were lower than those of LG mainline managers. The differences ranged from 1.0% to 4.7%.

Differences in the samples' mean annualized returns and mean standard deviations were tested, as with the Large Core universe, to see if they were significantly different. In similar fashion, a 95% confidence interval was calculated on the mean differences. LG developing manager mean returns were found to be statistically similar for both 1 and 3-year periods. The 5-year period, however, showed that LG developing manager mean returns were significantly different (higher) than LG mainline managers. For the same time periods, LG developing managers mean risks were found to be significantly different (lower) in the 3 and 5-year periods. The 1-year period was found to be statistically similar.

Skewness and kurtosis statistics were analyzed to determine if any combinations of both a tilt in return distributions (skewness), and "fat tails" (kurtosis) existed as a proxy for potential "surprise risk." Overall, the LG mainline manager universe exhibited more instances of both distribution tilt and extreme outcomes.

This occurred in two cases among LG mainline manager returns, and did not occur in the developing manager return distributions. When reviewing the distribution of standard deviations, the mainline manager universe exhibited one case of this combination, while the developing manager standard deviations exhibited none.

As with the Large Core comparisons, LG developing managers exhibited advantages over a LG mainline manager universe. The LG developing manager universe provided slightly higher annualized returns over most periods with modestly lower risk attributes. In addition, LG developing manager returns distributions tend to be normally distributed, with less “surprise risk” than that of their LG mainline counterparts.

Implementation

The early pages of this report provided information that might be used to support the establishment of a developing manager program. Public opinion regarding the rationale for such programs is mixed. Individual needs and goals vary and necessarily affect the structure of each program. This research paper sheds some light on one crucial factor in the decision making process. Specifically, we have demonstrated that there is no broad-based difference between the risk adjusted performance of developing and mainline managers.

Presented below are some elements/ characteristics identified by plan sponsors, investment managers, consultants and others for establishing a successful developing manager program:

- A written investment policy statement
- A clearly articulated statement of purpose and strategic objectives
- A well defined target universe
- Administrative flexibility so that firms can be retained or terminated in the most efficient fashion
- Portfolio flexibility to encourage the use of innovative strategies
- An exit/”graduation” strategy that is well thought out and easily implemented
- Clearly defined performance criteria and measurement techniques
- Clearly defined roles and responsibilities for staff, consultants and investment managers
- Periodic reporting requirements
- A well maintained database of small firms
- A process for routinely identifying firms that are just coming into being
- A risk management/monitoring system
- Benchmarks and hurdle rates appropriate to individual strategies
- An allocation substantial enough to have an impact

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