INSTITUTIONAL OR ENTREPRENEURIAL Management?

An analysis of organizational factors and their effect on manager performance.

BY DAVID FINSTAD

In his book *Moneyball*, author Michael Lewis detailed how the Oakland Athletics built a winning baseball team with one of the lowest payrolls in Major League Baseball.[1] Lewis described how the Athletics de-emphasized both qualitative factors such as fielding ability or athletic apperance as well as conventional statistics such as batting average and runs batted in. Instead, the team discovered through regression analysis that less popular statistics such as on-base average and slugging percentage led to more runs scored and therefore more wins. Furthermore, they found that these statistics were systematically undervalued by other baseball teams, allowing the A's to build a competitive team much more cheaply.

A similar philosophy is employed by the numerous quantitative investment managers who try to identify factors that lead to superior security selection. But what about selecting the managers themselves? Are there factors that explain or predict which managers will outperform?

Those who rely on past performance to select managers will likely be disappointed: research by the Frank Russell Company shows there is a negative correlation between a manager's past three years' performance and the subsequent three years' performance.[2] If you are focusing on past performance, however, you're not alone: human tendency is to assume the future will resemble the past. Behavioral finance theorists use terms such as "anchoring" or "overconfidence" to describe this behavior. The Vanguard Group's John Bogle notes that "although picking tomorrow's winners based on yesterday's performance is attractive in theory, there are no data that suggest the strategy works in practice." [3]

If you can't rely on past performance, can you use certain measures of organizational factors that explain investment manager performance? And if so, are you better off with a large, well-established "institutional" firm, with a deep team of investment professionals and plenty of resources, or would a smaller, younger, boutique or "entrepreneurial" firm produce better returns?

Methodology

Data was taken from the Brockhouse & Cooper database. The database contains a wide variety of information on investment managers covering organizational and process factors, investment style and performance issues. Three broad equity universes out of the 17 available to the author were chosen as being representative—Canadian equities (benchmarked against the S&P/TSX Composite), U.S. Core equities (versus S&P 500), and international equities (versus MSCI EAFE).

The database performance returns are based on quarterly gross-of-fee returns supplied by the managers (and not vetted), which are AIMR-compliant composites of institutional accounts. Managers were selected from those whose data was complete or nearly complete. Note that there is backfill in the Brockhouse & Cooper database: as a new manager is entered, so is their entire performance history. However, backfill bias is less a concern than survivor bias is. While the formal database started in the mid-1990s, the online version has been available since 2001; both versions are accessible only to institutional clients. The database now includes more than 875 managers, with some 3,500 products, and 40 separate universes, although only 17 of these universes were available to the author.

Performance was analyzed in terms of alpha (excess return, unadjusted for risk and relative to the appropriate

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benchmark), the information ratio (excess return divided by the standard deviation of excess return) and the Sharpe ratio (excess return over the risk-free rate divided by absolute standard deviation). The period from January 1998 to December 2003 was chosen to measure the performance effect from the various factors.[4] Six years was considered long enough to be meaningful without incorporating excessive changes at the firms studied. The requirement to have six years of performance data as well as other missing data reduced the size of the study from 155 to 85 mandates for Canada, from 223 to 122 for the U.S., and from 165 to 89 for the international universe. In all, 296 mandates were covered. A longer time requirement would have reduced the available sample size further. Note that some managers may have more than one mandate in the sample; however, out of the 14 distinct variables listed below, the only ones that were constant were Ownership, Firm Age, and Firm Size.

All of the data is end-of-period data, with the exception of Ex Ante Personnel Turnover, which was based on personnel turnover at the start of the measurement period. Additional beginning-of-period data was not available. The author acknowledges that this study focuses more on explaining the factors driving returns than predicting such factors, and that there is a need for such a study of beginning-of-period assets' effects on performance returns.

The quantitative analysis focused on multi-regression analysis of the independent variables (described in Table 1) against alpha, the information ratio and the Sharpe ratio. The multi-regressions included all 296 mandates from the Canadian, U.S. and EAFE universes. However, dummy variables were used to flag those mandates belonging to either the U.S. universe or to those managers that had more than one mandate in the sample. The regression analysis identified those factors that were statistically significant at 1%, 5% and 10%.

In addition to the multi-regression analysis, quintile spreads were also calculated for those factors that were found to be significant. For each of these factors, managers were first grouped into five quintiles and the average alpha (excess return over the relevant benchmark) for each quintile was determined. The spread between the first and fifth quintiles was then calculated. The quintile spread data should be viewed as supplementary information to the multi-regressions since the quintile spreads were not risk-adjusted and not all quintiles contained the same number of managers.

Variables

The variables used in the regressions are outlined below and can be grouped into four categories: organizational factors, process factors, style factors and dummy vari-

SUMMARY OF MULTI-REGRESSION ANALYSIS — TABLE 1

	Alpha		Information Ratio		Sharpe Ratio	
Adjusted R Square	25.40%		15.09%		37.82%	
	Coefficients	t Stat	Coefficients	t Stat	Coefficients	t Stat
Intercept	6.7172	5.5843***	0.4370	2.5990***	0.3571	5.1786***
Firm Age	0.0024	0.3943	0.0002	0.2238	0.0003	0.7899
Firm Size (log)	-0.0375	-0.3907	-0.0112	-0.8333	-0.0081	-1.4798
Ownership	1.0682	2.2788**	0.1413	2.1568**	0.0660	2.4570**
Product Size (log)	-0.0003	-0.0035	0.0233	1.7738*	0.0014	0.2514
Staff Size	0.0142	0.7176	0.0011	0.3953	-0.0002	-0.2095
Product Age	-0.0126	-0.8236	-0.0029	-1.3783	0.0005	0.5898
Experience	-0.0161	-0.5359	0.0034	0.8093	-0.0002	-0.1388
Personnel T/O	-0.8963	-2.9480***	-0.1159	-2.7277***	-0.0329	-1.8901*
Top-down	-1.5126	-2.1956**	-0.1671	-1.7355*	-0.0911	-2.3061**
Company Visits	-0.0001	-0.7748	0.0000	0.7032	0.0000	-1.6988*
Portfolio Size	-0.0035	-2.7884***	-0.0001	-0.7902	-0.0003	-4.2988***
Portfolio Turnover	-0.2903	-0.9546	0.1017	2.3917**	-0.0144	-0.8273
Value-Growth	1.3017	3.8418***	0.1682	3.5509***	0.0807	4.1555***
Market Cap	-3.3477	-3.5768***	-0.2775	-2.1211**	-0.1961	-3.6557***
U.S.	-1.7224	-4.6731***	-0.1302	-2.5273**	-0.1717	-8.1260***
Extra Mandate	0.3000	0.8360	0.0587	1.1711	0.0259	1.2599

Notes: ***statistically significant at 1%. **statistically significant at 5%. *statistically significant at 10%.

ables. The organizational factors can be used to delineate a manager as an "entrepreneurial/boutique" firm (characterized as employee-owned, newer, and smaller) or as an "institutional" firm. The process factors describe the investment process and although they are not directly related to a manager's type of organization, there may be some correlation. The style factors relate to a manager's investment style and are used in this study as control variables. Similarly, the dummy variables are also designed to isolate extraneous factors. Descriptive statistics follow a brief outline of each variable.

Organizational Factors

Ownership - the percentage of a firm owned by employees. This is likely the most important factor in identifying a manager as entrepreneurial or institutional (average 40.03%, standard deviation 39.49%, range 0-100%).

Firm Age - number of years since a firm was founded[5] (average 33.6 years, standard deviation 29.64 years, range 2-156 years).

Firm Size - the size of a firm in total assets under management as of December 31, 2003. The log of firm size was used in the analysis (average US$93.2 billion, standard deviation US$196 billion, range US$5.5 million-US$976 billion).

Product Age - number of years since the manager's product (mandate) was started[5] (average 17.05 years, standard deviation 11.61 years, range 2-76 years).

Product Size - the size of a product as of December 31, 2003. Again, the log of product size was used (average US$5.1 billion, standard deviation US$36.2 billion, range US$1 million-US$100 billion).

Staff Size - number of key investment professionals involved in the management of a particular product (average 9.33 professionals, standard deviation 9.01 professionals, range 1-88 professionals).

Experience - average number of years of investment experience of the key professionals (average 15.4 years, standard deviation 5.87 years, range 2.8-43 years).

Personnel Turnover - percentage turnover of key investment professionals over the past four years (average 34.59%, standard deviation 55.84%, range 0-700%).

Process Factors

Top-Down - percentage of a manager's investment process described by the manager as being top-down, as opposed to bottom-up (average 20.2%, standard deviation 24.77%, range 0-100%).

Company Visits - number of company visits undertaken by a manager during a year. Quantitative firms would tend to have zero company visits (average 713.35 company visits, standard deviation 2100.17 company visits, range 0-20,000).

Portfolio Size - the typical number of securities in a manager's portfolio. Fewer securities would tend to (but not always) indicate a more concentrated, higher conviction and higher tracking error portfolio (average 110.37 securities, standard deviation 141.27 securities, range 7-1050 securities).

Portfolio Turnover - the average annual percentage turnover of a manager's portfolio (average 60.16%, standard deviation 57.81%, range 4%-433.3%).

Style Factors

Value-Growth - percentage of a manager's investment process described as being value by the manager less the percentage described as growth; for example, a manager who describes their process as 50% value, 20% core and 30% growth would have a score of +20% for this factor (average net value exposure +3.94%, standard deviation 51.28%, range +100% to -100%).

Market Cap - percentage of a manager's portfolio invested in large cap securities. Although the parameters in the database varied across the Canadian, U.S. and EAFE universes, all three had an average of approximately 65% in large cap (average 63.59% large cap, standard deviation 18.68%, range 0-100%).

Dummy Variables

U.S. - mandates in the U.S. universe were flagged.

Extra Mandate - managers with more than one mandate across the three universes were flagged. As it turns out, only three of the variables are constant by including managers with extra mandates.

Results

Multi-Regression Analysis

The first multiple regression analysis analyzed the independent variables described above against the "pure" (non-risk adjusted) alpha. The results indicate that two organizational and two process factors were significant at 5% in explaining the managers' alpha. These were high employee Ownership, low Personnel Turnover, a low level of Top-Down allocation in the investment process, and

small Portfolio Size (i.e., more concentrated portfolios).

The intercept is significantly positive since this was a good period for active management (post-tech bubble). The median alphas of the managers in the study compared to the entire Brockhouse & Cooper database were: EAFE, +2.3% versus +2.3%; Canada, +3.5% versus +3.7%, and; U.S., +1.5% versus +1.4%. The managers that were excluded lacked sufficient data. Survivor bias is discussed in the methodology section.

These results favour the entrepreneurial firms, especially after considering that low Personnel Turnover and small Portfolio Size are correlated with high Employee Ownership and small Firm Size. However, one could easily argue that these results lack meaning because they are not adjusted for risk. Therefore, two additional regressions were done using the Sharpe ratio (absolute risk) and the information ratio (benchmark-relative risk).

Using the Sharpe ratio, the results were very similar to the basic alpha results. Factors that were significant at the 5% level (or lower) included high Employee Ownership, low Top-Down allocation and small Portfolio Size. In addition, low Personnel Turnover and a low number of Company Visits were also significant at 10%.

The information ratio multi-regression confirmed three factors from the previous regressions as being significant: high Employee Ownership, low Personnel Turnover and low Top-Down allocation (significant at 10% only). However, it produced a couple of additional twists. High Product Size—which is aligned to the institutional organization theory—was found to be significant at 10%; high Firm Size on the other hand detracted from performance, but not significantly. The other factor of significance was high Portfolio Turnover, which isn't correlated to either entrepreneurial or institutional firms. The interesting facet of this discovery is that on alpha and Sharpe ratio bases, low Portfolio Turnover was correlated to superior performance, although it wasn't statistically significant.

Although the Sharpe ratio and information ratio

QUINTILE SPREADS FOR VARIABLE FACTORS — TABLE 2

Universe	Q1	Q2	Q3	Q4	Q5	Q1-Q5
OWNERSHIP						
Canada	3.73	4.78	6.13	2.91	1.84	1.89
U.S.	2.30	2.35	1.78	1.81	0.92	1.38
EAFE	4.99	1.94	4.15	2.19	2.44	2.55
Average	3.67	3.02	4.02	2.30	1.73	1.94
PERSONNEL TURNOVER						
Canada	1.51	3.54	5.43	4.37	5.19	-3.68
U.S.	0.69	0.35	1.73	2.05	2.86	-2.17
EAFE	0.95	3.42	2.96	3.31	4.40	-3.45
Average	1.05	2.44	3.37	3.24	4.15	-3.10
EX ANTE PERSONNEL TURNOVER (tertile)						
Canada	4.74	5.06	6.73			-1.99
U.S.	0.56	0.42	0.39			0.17
EAFE	0.38	3.25	0.91			-0.53
Average	1.89	2.91	2.68			-0.78
PORTFOLIO SIZE						
Canada	2.50	3.66	4.18	3.67	5.11	-2.61
U.S.	1.09	0.94	1.82	2.15	2.32	-1.23
EAFE	2.03	3.19	2.16	3.26	4.82	-2.79
Average	1.87	2.60	2.72	3.03	4.08	-2.21
TOP-DOWN						
Canada	2.45	3.23	3.10	5.29	4.56	-2.11
U.S.	1.21	0.73	0.15	1.69	2.45	-1.24
EAFE	2.43	2.62	2.32	1.95	4.55	-2.12
Average	2.03	2.19	1.86	2.98	3.85	-1.82

NOTES: Alphas are annualized and not adjusted for risk based on the three years ending December 2003 (except Ex Ante Personnel Turnover). Personnel turnover is based on the four years ending December 2000. Results were grouped into three tertiles for each universe due to smaller sample sizes. For Canada, 72 out of 85 managers had personnel turnover data at December 2000, for EAFE 54 out of 89 managers had data, for the U.S. 64 out of 122 managers had data.

regression results have much in common, the differences between them are of interest. Institutional firms appeared to have performed poorer on both counts; however, they did perform relatively better on an information ratio basis. This suggests that institutional firms are more benchmark-aware than their entrepreneurial peers. A less polite way of saying this is that they are benchmark "huggers" or "closet indexers." Indeed, low tracking error was correlated to high Firm Size, high Product Size and low Employee Ownership. But despite their higher tracking errors, small firms and employee-owned firms still produced better information ratios.

Discussion of Significant Factors

Employee Ownership - was statistically significant in all three regression analysis and had first- to fifth-quintile spreads ranging from 1.8% to 2.55%. The results were not completely monotonic[6], but the top three quintiles consistently fared well while the bottom two quintiles consistently lagged. The message in the positive quintile spreads and high t-stats is not so much that you need to hire an investment shop that is 100% owned by the employees, but more that you should be careful in hiring a firm with no employee ownership.[7]

Personnel Turnover - was also a significant factor in all three cases. For this study, it was defined as the percentage turnover of key investment staff over the past four years. Unfortunately, there was a bit of a data mismatch as the performance period was measured over six years (although one could argue that an additional two years would capture personnel issues that would precede a departure). Nevertheless, the results indicate the destructive effects on performance from losing employees. Top- to bottom-quintile spreads ranged from -2.17% to -3.68% with Canada having the largest negative effect from Personnel Turnover.

The downside of these findings is that Personnel Turnover is likely one of the least stable and possibly the most difficult to predict of all the organizational factors that were studied. Therefore, to add insight into the analysis, Ex Ante Personnel Turnover was also included in the quintile spread tests by looking at personnel turnover for the four years ending December 2000 and then evaluating the effect on performance over the next three years. These results were much less robust than they were in the original test (although with incomplete data, there may be a greater potential for survivor bias). In other words, Personnel Turnover appears to do a better job of explaining past performance than it does in predicting future performance. Low Personnel Turnover is not explicitly a characteristic of an entrepreneurial firm; however, it is positively correlated to small Firm Size and high employee Ownership.

Portfolio Size - was an extremely significant factor for the alpha and Sharpe ratio regressions, but did not reach statistical significance for the information ratio. The quintile spreads varied from -1.23% to -2.79%, indicating that this is a negative factor and that alpha tends to diminish as portfolios get larger and more diversified. These results are intuitive since one would expect more concentrated portfolios—consisting of managers' best ideas—to outperform, especially within three sample groups that all generated positive alpha for the median manager.

The relative underperformance of the more diversified portfolios may be further evidence of the tendency of larger managers to closet index as a means to reduce business risk and to protect their asset base.

Top-Down - was the fourth significant factor. It was also the most unexpected and perhaps the one factor that most deserves further study. Top-Down refers to the percentage of the investment process that is based on top-

down allocation as opposed to bottom-up security selection. Based on the individual universe multi-regressions below, the returns to top-down managers were worst in the Canadian and U.S. universes where the only top-down decision is sector allocation. The multi-regression results in EAFE, where managers also face country and currency decisions, were the least affected. Therefore, these results may need to be treated with some skepticism.

Results of Other Significant Factors

Product Size - was a significant positive factor for the information ratio at 10% significance, but it was relatively neutral for alpha and the Sharpe ratio. The fact that Product Size was generally more positive than Firm Size may suggest that a firm that is focused and has considerable assets in one product can produce good performance, but a large firm with assets spread out among many products is not as likely to produce good performance. However, there is an important caveat to note: because this factor was based on data at the end of the period, it may reflect assets going into managers with strong recent performance. Therefore, further study is recommended using beginning-of-period (ex ante) assets.

Portfolio Turnover - was significantly positive for the information ratio, meaning that high-turnover managers have high IRs; however, this was not confirmed by the other two regressions. One possible explanation for this could be the tendency for high-turnover managers to actively trade positions around the benchmark weight; however, this would need to be confirmed by additional research.

Company Visits - was significantly negative for the Sharpe ratio at 10%, but leaned negative for alpha and leaned positive for the information ratio. The positive leaning information ratio results are counter-intuitive if one considers quantitative firms with little or no company visits to be more focused on maximizing their information ratio compared to traditional fundamental firms.

Scorecard

As discussed earlier, excluding the two style factors there were four consistently significant factors, two of which were mainly organizational in nature (Ownership and Personnel Turnover) and two process-related (Portfolio Size and Top-Down). Entrepreneurial firms score well on the first three factors, while the fourth factor is not associated with either type of firm.

Ownership is obviously connected to entrepreneurial firms. Personnel Turnover is a negative factor which is positively correlated to Firm Size (at 0.16) and negatively correlated to Ownership (at -0.13). Portfolio Size is a process factor which negatively impacts performance. It is also correlated positively to Firm Size (0.28) and negatively to Ownership (-0.19). Top-Down is not significantly correlated to any of the organizational factors.

Of the other organizational and process factors, the results from Firm Size, Product Age, and Company Visits leaned in favour of the entrepreneurial firms while Firm Age, Product Size, Staff Size and Experience leaned towards the institutional firms. However, none of these factors showed much statistical significance. Overall, the evidence favours the entrepreneurial firms.

Summary

Conventional investment manager selection has emphasized an analysis of the "Ps": philosophy, process, portfolio and performance. This paper has presented an alternative approach that could be used instead of, or in

addition to, traditional methods. Four factors were identified as being significant in explaining an investment manager's performance: high Employee Ownership, low Personnel Turnover, small Portfolio Size, and an investment process that de-emphasized Top-Down allocations. The first three of these factors are much more aligned with entrepreneurial organizations than they are with larger, institutional types of firms, while Top-Down is aligned with neither. By focusing on these key organizational factors, you may not win the World Series, but you may uncover some superior managers. ▮

Acknowledgements

The author would like to thank the following for their valuable assistance: Brockhouse & Cooper, Paul Halpern, James Lewis and the referees from the *Canadian Investment Review*, and my colleagues Ken Gordon, Laurence Waring, Gosia Talanczuk and Kevin McDowell.

Endnotes

1. Lewis, Michael. *Moneyball*, W.W. Norton & Company, New York, 2003.
2. Based on a sample of money manager returns from January 1994 to December 2003. Correlations for five universes of equity managers—Canadian, International, U.S. Core, U.S. Value and U.S. Growth—ranged from -0.19 to -0.44.
3. John Bogle, Vanguard Group, "The Mutual Fund Industry 60 Years Later: For Better or Worse?" *Financial Analysts Journal*, January/February 2005.
4. Six years was used instead of five in order to mitigate the effects of value and small cap styles in the post-tech bubble environment. For experimentation's sake, the three regressions (alpha, IR, and Sharpe ratio) were performed using five-year data; the results were not materially different. In the case of the alpha regression, Portfolio Turnover became a significantly negative factor (t-stat changes from -0.95 to -2.09). For the information ratio regression, Ownership went from significantly positive at 5% to significant at 7% (t-stat +1.86), while Portfolio Turnover is no longer significantly positive. Finally, the Sharpe ratio regression saw Firm Size turn significantly negative (previous t-stat was -1.48), Product Age become significantly positive at 10% (previous t-stat was 0.59), Visits go from significantly negative at 10% to significant at 5%, and Personnel Turnover move from significantly negative to a t-stat of -1.14.
5. For Firm Age and Product Age, a small proportion of firms under six years old were able to show six years of performance, since they were able to transfer AIMR-compliant performance from a predecessor firm.
6. That is to say, each quintile was successively higher or lower than the previous quintile.
7. Further information about ownership and incentives, such as whether or not employees had incentives that increased their ownership stake over the five- and six-year periods, was not available from the database.