PORTFOLIO MANAGEMENT INTENSITY AND PERFORMANCE IMPLICATIONS:

AN INTERNATIONAL EMPIRICAL INVESTIGATION

Dirk Brounen
Piet Eichholtz
David Ling

April 2005

Abstract

This paper investigates whether it is possible to create value through the active management of direct property portfolios. Using data from Australia, the United States and the United Kingdom, we examine whether portfolio trading activity and growth explain outperformance of listed property companies. The results indicate that beating the market using such a strategy is difficult even in direct property markets. When the property type in which the firm specializes is included as a control variable in the regressions, none of the portfolio management intensity indicators developed in this paper are significantly associated with outperformance.

Brounen is with the Rotterdam School of Management of Erasmus University Rotterdam, Eichholtz is with Maastricht University and the University of Amsterdam and Ling is with the Warrington College of Business of the University of Florida. The authors gratefully acknowledge research support from the Real Estate Research Institute. Excellent research assistance was provided by Hugh Marble. Furthermore, Jeroen Beimer is thanked for providing access to the GPR database.

Contact Author: Dirk Brounen, Erasmus University Rotterdam, Department of Financial Management, P.O. Box 1738, 3000 DR, Rotterdam, The Netherlands, dbrounen@fbk.eur.nl.

PORTFOLIO MANAGEMENT INTENSITY AND PERFORMANCE IMPLICATIONS:

AN INTERNATIONAL EMPIRICAL INVESTIGATION

Introduction

Portfolio returns in excess of the risk free rate can result from: (1) the incremental risk imbedded in the portfolio and (2) from the incremental value added arising from the skills of the portfolio manager, not related to risk.[1] The risk and return characteristics of a real estate portfolio largely reflect the strategic allocation decisions (or "style") of the portfolio or fund (apartment vs. retail properties, Southeast vs. Northwest U.S. geographical concentration, development versus existing properties, etc.). For example, Eichholtz et al. (2001) find that international diversification strategies significantly impact REIT returns and Capozza and Seguin (1999) and Boer et al. (2004) find a significant relation between geographical and property type focus and returns for publicly traded real estate securities. What is much less clear, however, is the extent to which active portfolio managers can add, or destroy, value by pursuing tactical, i.e. "opportunistic," asset selection and investment timing strategies.

Measuring manager value added is more complicated in private real estate markets than in public securities markets because truly passive investment strategies against which an active strategy could be benchmarked are not possible. This is because index products akin to those that mimic the return on the S&P 500 and other stock market indices are not available to investors in private commercial real estate markets. The lack of tradable passive benchmarks requires private market investors to purchase illiquid, whole assets that require significant amounts of managerial effort to acquire, maintain, and dispose.

We define active real estate managers as those who pursue tactical market timing and asset selection strategies. Such opportunistic investment strategies should, on average, produce more acquisition and disposition activity than more passive buy-and-hold strategies. This paper examines the question: Do real estate portfolio managers who pursue opportunistic investment strategies add value? More specifically, we examine the effects of portfolio management "intensity" on the performance of publicly traded real estate companies. The research employs a sample that spans eight years (1996-2003) and includes the three largest public real estate markets in the world: the United States, the United Kingdom, and Australia.

[1] For more discussion, see Stoesser and Hess (2000).

We measure firm level performance in several ways. First, we calculate excess (i.e., risk-adjusted) stock returns using both single factor and multifactor pricing models. The excess returns (or "alphas") from these models are then regressed on several indicators of portfolio management intensity, including the frequency of property acquisitions and dispositions, the firm's portfolio turnover rate, and the extent to which the firm has expanded the size of its portfolio. To control for other variables that have been shown to be important in explaining excess returns, we also include the firm's stock market capitalization, leverage rate, dividend yield, earnings per share, price earnings rations, and price-to-book ratios. In addition to examining firm-level excess return performance, we also estimate the relation between our management intensity indicators and two measures of operating performance: return on assets and return on equity.

Our results indicate that beating the market using an active trading strategy is difficult even in direct property markets. When the primary property type in which the firm invests is included as a control variable in the model specification, none of the portfolio management intensity indicators developed in this paper are significantly associated with excess stock returns or enhanced operating performance.

The paper proceeds as follows. In the next section, we review the relevant literature on management intensity and performance. Section 3 describes our research methodology, while Section 4 contains a description of the data as well as summary statistics for our measures of management intensity and performance. Our regression results are presented and discussed in Section 5, while our findings and their implications are discussed in a concluding section.

The Literature

The traditional formulation of the efficient market hypothesis (EMH) precludes the existence of manager value added or "alpha" (Jensen, 1968, Fama, 1970). In the absence of manager alpha, active management (portfolio churning), with its attendant transaction costs, destroys portfolio values. Investors in actively managed mutual funds are, effectively, buying into the fund manager's attempt to obtain information that will generate superior performance. If superior performance can't be obtained through such information, then passive management, or index-tracking, is a more efficient way to manage the assets of the fund (Engstrom, 2003). Numerous studies have focused on the ability of actively managed mutual funds to outperform funds that passively track a benchmark index. Although the proper techniques for risk-adjusting returns when calculating manager alphas is a topic of ongoing debate, recent studies of fund performance conclude that fund managers are not able to time the market (Chen et al., 2005), that the average mutual fund alpha is negative once adjustments for fund style are made (Carhart, 1997, Wermers,

2000), and that funds that trade more frequently have, at best, marginally better stock picking skills than funds that trade less often (Chen et al., 2001). However, some recent evidence suggests that a minority of active mutual fund managers actually do pick stocks well enough to cover their trading costs (Kallberg, et al., 2000, Wermers, 2003, Baker et al., 2004, and Kosowski, et al., 2004), although Wermers (2003) concludes that this manager alpha is reflected in only a minority of funds that take relatively large volatility bets.

What about manager alpha in commercial real estate markets? Recent research has produced limited evidence that returns on publicly-traded real estate securities are partially predictable (see, for example, Liu and Mei, 1992, Mei and Liu, 1994, Cooper, Downs, and Patterson, 1995, Li and Wang, 1995, Karolyi and Sanders, 1998, Ling, Naranjo, and Ryngaert, 2000, and Brooks and Tsolacos, 2003), although no evidence currently exists that superior return performance using a market timing strategy to buy and sell real estate securities is possible once transaction costs are incorporated into the analysis. Despite this, many analysts and investors have concluded that skilful portfolio managers *can* add value (on a risk-adjusted basis) through asset selection and investment timing strategies in the *private* real estate market.[2] This conclusion is based on the widely held view among practitioners that private (unsecured) commercial real estate markets exhibit persistent inefficiencies that can be exploited by superior investment managers. The purported inefficiencies in private real estate markets are thought to arise from an absence of centralized price information or transactions, infrequent trading, a lack of transparency in the transactions that do occur, and the heterogeneity and indivisibility of commercial real estate assets. If private real estate markets are less competitive than public markets, the potential payoff from market timing and other tactical investment strategies is expected to be greater.

The recent proliferation of real estate investment funds and management strategies is evidence that many investors believe real estate portfolio managers can add value. These funds and strategies are know by descriptive names such as “enhanced core,” “value added,” or “opportunistic,” depending loosely on the magnitude of the excess returns targeted by the fund (Stoesser and Hess, 2000). The increased returns expected to be produced by these strategies are typically thought to arise from the manager’s ability to successfully “target” geographical markets and/or property types and time individual property acquisitions and dispositions.

The management style of most publicly traded U.S. REITs has also changed significantly during the past decade. Prior to 1993, U.S. REITs were passive investment vehicles that owned diverse portfolios of properties. Most REITs arranged for both portfolio and property management through external advisors. REIT portfolios were typically static and perhaps best described as “diversification plays.” Post-1992 REITs differ significantly from their predecessors. Most are

[2] See, for example, Stoesser and Hess (2000) and Han (1996).

fully integrated operating companies best characterized as management plays rather than passive conduits for investors' capital. Portfolio holdings are typically focused by property type and, frequently, by geographic market. Such specialization allows investors to more fully benefit from the specific expertise of the management team. In fact, many REITs often sell at premiums to their estimated net asset values, perhaps in anticipation of the growth in earnings that is expected to be created by successful active management.

Despite the proliferation of actively managed REITs and private real estate funds and claims of superior "targeting" ability, there exists limited evidence on the ability of active real estate managers to enhance operational or stock return performance. This paper attempts to shed some light on the question by analyzing the relation between a number of management intensity indicators and the performance of publicly traded real estate companies.

Research Methodology

We define active managers as those who pursue tactical market timing and asset selection strategies. Such opportunistic investment strategies should, on average, produce more trading activity and higher rates of portfolio turnover than more passive buy-and-hold strategies. To classify public real estate firms along the active-passive spectrum, we construct and analyze a number of management intensity indicators.

Trading Activity

The trading activity indicator is constructed to capture the propensity of firms to acquire and dispose of properties. This measure captures the number of properties purchased in a given year, plus the number of properties sold, relative to the average number of properties in the portfolio during the year. More specifically, the trading activity indicator for firm *i* over a *n* year sample period is defined as:

$$TRADING_i = \sum_{t=1}^{n} \left(\left(\frac{2Buy_{it}}{(X_{i(t-1)} + X_{it})} \right) + \left(\frac{2Sell_{it}}{(X_{i(t-1)} + X_{it})} \right) \right) / n \qquad (1)$$

where Buy_{it} and $Sell_{it}$ refer, respectively, to the number of properties bought and sold by firm *i* in year *t,* and X_{it} is the number of properties held by firm *i* at the end of year *t*. The first term captures acquisition activity in year *t* relative to the average number of properties in the portfolio in year *t*, while the second term captures sales activity. $TRADING_i$ is an average of the index value over a desiginated *n*-year period. We posit that a high level of asset trading is a proxy for an active management strategy.

Turnover Rate

Our second measure of management intensity is the portfolio turnover rate. According to Sharpe et al. (1999), a portfolio's turnover rate is equal to the dollar value of sales during time period *t* divided by the average dollar value of the portfolio or firm in period *t*. Thus, the average portfolio turnover rate for firm *i* over a *n* year sample is defined as:

$$TURNOVER_i = \sum_{t=1}^{n} \left(\frac{2Sales_{it}}{(RE_{i(t-1)} + RE_{it})}\right) / n \qquad (2)$$

where $Sales_{it}$ is the value of property sales (measured in the local currency) in year *t* and RE_{it} is the total value of firm *i*'s assets at the end of year *t*. The difference between $TRADING_i$ and $TURNOVER_i$ is that the former is based on the *number* of properties acquired or sold whereas $TURNOVER_i$ is based on the dollar value of transactions.

Portfolio Expansion

To capture the extent to which a firm has grown the number of properties in its portfolio over a designated period, we also construct the following portfolio expansion measure:

$$EXPANSION_i = \sum_{1}^{n} \left(\frac{X_{it}}{X_{i(t-1)}}\right) / n \qquad (3)$$

where X_{it} refers to the number of properties owned by firm *i* at the end of year *t*. $EXPANSION_i$ captures the average annual increase in the number of properties owned by firm *i.*

Measuring and Explaining Abnormal Performance

We first estimate the relation between our management intensity indicators and firm-level stock returns. Because of the potential for correlation among our management intensity indicators, different combinations are examined. To control for other variables that have been shown to be important in explaining the cross-section of stock returns, we also include the firm's stock market capitalization, leverage rate, dividend yield, earnings per share, price earnings ratio, and price-to-book ratio in the operating performance regressions. We control for cross-national variation in operating performance by running separate regressions for each of our three counties.

Jensen's (1968) single-factor model assumes there is only one potential source of systematic risk in the economy—i.e., exposure to fluctuations in the return on the market portfolio.[3] However, several recent studies have documented the existence of multiple systematic risk factors in stock, bond, and commercial real estate markets.[4] Thus, Jensen's single-factor performance evaluation models may be misspecified due to the existence of omitted variables. We therefore implement a multi-factor model of commercial real estate returns using the Fama-French factors (i.e., *SMB* and *HML*) in addition to the standard market risk factor (*MKT*), as displayed in equation (4).[5]

$$(R_{it} - R_{ft}) = \alpha_{it} + \gamma_{1it}(\mathrm{MKT_t}) + \gamma_{2it}(\mathrm{SMB_t}) + \gamma_{1it}(\mathrm{HML_t}) + \varepsilon_{it} \quad (4)$$

In addition to examining excess return performance, we also quantify the effect of portfolio management intensity on operating performance using return on assets and return on equity.

Data

To make statistically meaningful inferences regarding the performance effects of active asset and portfolio management, we examine the three largest property share markets: Australia, the United Kingdom, and the United States. These countries have different institutional infrastructures regarding public property companies, including different regulations relating to the discretion management has in the use of free cash flows. In Australia, our sample consists of publicly traded Property Trusts (PTs), which are required to distribute 100% of fiscal earnings in the form of dividends to shareholders in exchange for the nontaxation of income at the entity level. In the U.K., listed property companies are subject to the same regulations as other public corporations; in particular, there are no regulatory restrictions regarding the distribution or reinvestment of free cash flows. Moreover, income net of allowable deductions at the entity level is subject to taxation. In the U.S., our sample includes both publicly traded Real Estate Investment Trusts (REITs) and Real Estate Operating Companies (REOCs). REITs are required to distribute at least 90% of taxable income as dividends to avoid taxation at the entity level; thus, they are constrained with respect to their use of free cash flow. REOCs operate as standard corporations and are therefore subject to taxation at the entity level. Tax-exempt trusts in Australia and REITs in the U.S. are allowed to develop properties only for their own portfolio, and may not sell such properties for a number of years. Tax-paying property companies in the U.K. and REOCs in U.S. do not operate under such limitations.

[3] One can view the market portfolio as a portmanteau variable proxying for a set of latent risk factors.
[4] See, for example, Chen et.al. (1986) Ferson and Harvey (1991), and Ling and Naranjo (1997).
[5] The Fama-French factors have been shown in a large number of studies to help explain variations in stock returns. *SMB* captures the difference between the return on a portfolio of small cap stocks and the return on a portfolio of large stocks. *HML* captures the difference between the return on a portfolio of high book-to-market-value stocks and the return on a portfolio of low book-to-market-value stocks.

In principle, we could estimate our regression model using annual cross-sections. However, our annual proxies for trading activity are likely to be noisy. Conversely, estimating the model for the full 1996-2003 sample period would introduce a significant degree of survivorship bias because numerous companies did not exist for the full eight-year period. We therefore test the model on two four-year subperiods: 1996-1999 and 2000-2003.

Our sampling procedure for Australia and the U.K. begins with firms in the Global Real Estate Securities Database of Global Property Research (GPR), a Netherlands-based firm. This database contains prices market capitalization, dividends, and company characteristics of real estate companies listed on the stock exchanges of more than 26 countries on a monthly basis since 1984. This unique database contains the history of some 400 real estate companies—both currently listed companies and those that have been delisted. GPR produces standard as well as customized indices widely used for performance evaluation and benchmarking. Each country's GPR General Index, for example, is constructed to be representative of the movements in the country's real estate securities market.[6] In the U.S., we begin our sample selection efforts with the SNL Datasource produced by SNL Financial, a leading provider of data, analytics, and news to the real estate sector.[7] Our three measures of portfolio management intensity have been constructed from annual report information in the U.K. and Australia. In the U.S., these indicators are constructed from data obtained from the SNL DataSource.

From the universe of property companies covered by GPR or SNL in each country, we selected for further analysis those companies for which all of the required data are available for at least one of our two sample subperiods. This sampling procedure produced the final set of companies summarized in Table 1. During the 1996-1999 subperiod, the sample includes 41 U.S. companies. The number of Australian and British companies available during this first subperiod is not sufficient for our analysis. During the 2000-2003 subperiod, our sample includes 146 U.S. companies, 21 Australian firms, and 19 U.K. companies. The third column of Table 1 provides average 2003 stock market capitalizations in U.S. dollars. Interestingly, these average capitalizations display little variation across countries, ranging from $1.36 million in Australia to $1.43 million in both the U.S. and U.K. The typical use of leverage differs considerably more across the three countries, with the U.S. having the highest 2003 average debt-to-asset ratio at 51.9%. At 7.1 percent and 6.2 percent, respectively, dividend yields in Australia and the U.S. are significantly higher than the 3.4 percent average of their U.K. counterparts. This difference reflects the dividend distribution requirements in the U.S. and Australia.

[6] Additional information on GPR and its products can be found at www.propertyshares.com/algemeen/home/index.asp.
[7] More information on SNL's real estate industry data can be found at www.snl.com/real_estate/

---- Table 1; Sample Statistics ----

Stock return performance statistics are presented in Table 2. From our monthly data, we report mean annualized total returns and standard deviations for our sample firms. For comparison, we also report the corresponding return statistics for the GPR General Index and the Morgan Stanley Capital International (MSCI) All Share Index for each country. The GPR General Index is constructed to be representative of the movements in the country's real estate securities market. The MSCI All Share Index is a broad-based measure of stock return performance in each country.

In the U.S., the risk and return characteristics of our sample firms differ little from the broad-based measure of public real estate performance captured by the GPR General Index. Annualized total returns averaged approximately 12 percent over the entire 1996-2003 sample period. However, U.S. real estate returns varied greatly across the two subperiods, averaging five to six percent in 1996-1999 versus approximately 19 percent during the 2000-2003 subperiod. In the U.K., our sample firms generated higher average returns over the 2000-2003 sample period than U.K.'s GPR General Index (19.8% versus 15.9%), with less volatility. In contrast, our Australian sample produced somewhat lower average returns than the GPR General Index for Australia during 2000-2003, with slightly less volatility. A noteworthy feature of Table 2 is the significant extent to which listed property companies outperformed the broader stock market in all three counties over the 2000-2003 subperiod. For example, our U.S. sample produced an average total return of 19.5 percent; the corresponding return on the MSCI All Share index for the U.S. was -5.1 percent. In contrast, our U.S. sample of firms significantly underperformed relative to the broader stock market during the 1996-1999 subperiod.

---- Table 2; Performance Statistics ----

Table 3 provides descriptive information on TRADING, our first measure of management intensity. The first panel in Table 3 displays the average number of properties owned by our sample firms in each year. In the U.S., the number grows considerably over the sample period, increasing from 70 properties in 1996 to 202 properties in 2003. To assess the cross-sectional distribution of TRADING, the 25^{th} and 75^{th} percentiles are also reported. These statistics show that the cross-sectional variation of properties owned in the U.S. sample has increased over time, reflecting the relatively more rapid growth of larger property companies.

---- Table 3: Trading Ratios ----

Although starting from a smaller base than the U.S., Australian property companies significantly increased the number of owned properties during the 2000-2003 subperiod. Similar to the U.S., we also observe more rapid growth for the larger companies, resulting in an increasing cross-sectional spread. This contrasts markedly with the United Kingdom, where growth in the average number of properties owned from 2000-2003 has been slightly negative. The cross-sectional spread of the sample has also decreased, reflecting the stronger portfolio growth of smaller U.K. companies.

When comparing the average number of owned properties, the most striking observation is the significant cross-country variation. For example, in 2002 the average number of properties held by our sample U.S. firms was 202. The corresponding averages are 69 in the U.K. and 40 in Australia. Given that the cross-country average market capitalizations are quite comparable (see Table 1), it is clear that property companies in the U.S. own, on average, much less expensive properties than their U.K. and, especially, Australia counterparts.

Panels B and C of Table 3 provide information on the average number of sold and bought properties, respectively. Panel B shows that U.S. property companies were infrequent sellers during the 1996-1998 period, but have been somewhat more active sellers since 1999. Conversely, U.S. property acquisitions (Panel C) have been much more volatile, especially during the boom in REIT secondary equity offerings in 1997 and 1998. Since 1999, average property acquisitions in the U.S. have fallen. This may reflect, in part, the growth restrictions imposed on REITs by the capital market, with REITs generally trading at discounts to net asset values after 1999. Judging by the average number of properties sold during 2000-2003--never higher than one--smaller U.S. property companies have not been active sellers. A similar conclusion is obtained from an examination of acquired properties. In short, larger U.S. companies have been more active traders than smaller firms.

Property dispositions by Australian property companies have been far less frequent than in the U.S. However, the number of properties acquired has increased in recent years, driven by the behaviour of the larger firms. Property companies in the U.K. have been more active than their counterparts in Australia and the U.S., as the numbers of properties bought and sold is consistently high relative to the number of properties in the average portfolio.

Our composite measure of trading activity, TRADING, is reported in the bottom panel of Table 3. As previously discussed, $TRADING_i$ is calculated by summing the number of acquired and disposed properties and dividing by the average number of properties in the portfolio during the year. Trading activity in the U.S. was relatively high in 1996-1998, with TRADING ranging from 0.35 to 0.44. From 1999 through 2003, however, the average value of TRADING for U.S. firms fell more than half, ranging from 0.13 to 0.16. In our Australian sample, TRADING ranged in

average value from 0.15 to 0.31 during 2000-2003. U.K. property companies have been the most active with TRADING averaging close to 0.30 throughout the 2000-2003 subperiod.

Our second measure of portfolio management intensity, TURNOVER, is also based on trading activity, but captures the dollar value of the acquisitions and dispositions rather than simply the number of property purchases and sales. These turnover statistics are reported in Table 4. All values are expressed in U.S. dollars. Total portfolio values are reported in Panel A, the dollar value of dispositions and acquisitions in Panels B and C, and TURNOVER in panel D.

Examination of average portfolio size (Panel A) reveals that portfolio growth in all three countries has been even stronger when measured in dollar values. In particular, as the number of properties owned by U.S. companies grew approximately threefold over the sample period, the growth in average portfolio value was nearly 500 percent. The differences are especially pronounced in the larger portfolios. The 75th percentile for the U.K., for example, did show consistent growth when measured by number of properties. However, the 75th percentile nearly doubles in dollar value over the 1998-2003 time period. This value increase could have been caused by general property price appreciation in the U.S. or by a change in the preferences of property companies toward larger properties.

----- Table 4; Turnover Ratios -----

The average dollar value of property dispositions reported in Panel B of Table 4 also shows more variability across time than dispositions measured by the number of sold properties. The average dollar value of property dispositions is significantly higher in the U.K. than in the U.S. and, especially, Australia during 2000-2003. In the U.S., a slight upward trend in average annual dispositions is visible over the full sample period. The dollar value of property acquisitions (Panel C) does not appear much different than acquisitions measured in terms of number of properties.

The last panel of Table 4 contains our composite measure of portfolio turnover, TURNOVER$_i$. These values suggest that portfolio turnover, when measured in dollar values, is mainly concentrated among the larger property companies, especially those listed in Australia and the U.S.

----- Table 5; Expansion Ratios -----

Our final measure of portfolio management intensity, EXPANSION$_i$, is defined as the average annual percentage growth in the number of properties in the company's portfolio. In contrast to TRADING and TURNOVER, EXPANSION can, and does, take on negative values. As can be seen in Table 5, U.S. companies exhibited substantial growth during 1996-1998, with the average

value of EXPANSION ranging from 37 to 60 percent. However, average portfolio growth declined to 18 percent in 1999. During the 2000-2003 subperiod, portfolio growth for our U.S. sample was minimal, ranging from just 3 percent to 5 percent. This modest growth was produced by the larger firms; smaller firms, as measure by the 25th percentile, actually declined in size during this subperiod.

In the U.K., EXPANSION ranged from 5 percent to 8 percent during the 2000-2004 subperiod. Similar to the U.S., this modest growth was generated by the larger firms. Portfolio growth in Australia during 2000-2003 has greatly exceeded that of the U.S. and U.K., ranging from 12 percent to 30 percent. Once again, this significant growth in the average number of properties has been driven exclusively by larger firms.

Risk-Adjusted Stock Returns and Operating Performance

Table 6 contains summary statistics for our performance measures. The top panel displays information on Jensen's alphas, our benchmark measure of excess return performance; the second panel contains the alphas from our multifactor (Fama-French) estimation. These first-stage total return regressions produce the alphas used as dependent variables in our second set of regressions, which are designed to examine the impact of management intensity on abnormal returns (i.e., alpha). The third and fourth panels contain summary statistics on two measures of firm operating performance, return on equity (ROE) and return on assets (ROA).

----- Table 6; Summary Statistics for Dependent Variables -----

During 1996-1999, the mean Jensen's alpha, based on monthly data, for our 37 U.S. companies was zero, with a standard deviation of 0.01. Our three-factor specification of excess return performance also produced a mean alpha of zero and a standard deviation of 0.01. During the 2000-2003 subperiod, the mean Jensen's alpha for our 143 U.S. companies was 0.02 (or 2.4 percent per year), with a standard deviation of 0.07. Our multifactor return specification produced an average Jensen's alpha of 0.01 with a standard deviation of 0.03. Excess return performance, measured with Jensen's alpha, during 2000-2003 for our 20 Australian firms was 0.01, very similar to our U.S. result. However, the standard deviation of 0.01 indicates less cross-firm variation in abnormal performance than observed in our U.S. sample. The mean Jensen's alpha and standard deviation estimated for our 14 U.K. firms during the 2000-2003 subperiod were 0.02 and 0.00, respectively. Our multifactor excess return specification produced very similar results.

Table 7 provides additional information on our first-stage excess return models. During 1996-1999, our one-factor return model explained 5 percent of the variation in our U.S. sample. The

adjusted R^2 increases to 10 percent when HML is added as an explanatory variable and to 15 percent when both HML and SMB are included. Interestingly, the explanatory power of all three pricing models in 2002-2003 is reduced relative to 1996-1999 in our U.S. sample; for example, the three-factor model explains only 5 percent of the variation in firm level stock returns. The regression models explain a much larger percentage of stock price variation in the U.K., with the adjusted R^2 ranging from 14 percent in the single-factor model to 19 percent in the three-factor model. The explanatory power of the models using Australian data is significantly greater, with the adjusted R^2 ranging from 32 percent to 35 percent.

----- Table 7; Explanatory Power of Stock Return Regression Models -----

As a further diagnostic test of our first-stage excess return regressions, the correlations among our single-factor and multifactor alphas are calculated and reported in Table 8. For the 2000-2003 subperiod, the correlation between alphas is 0.95 in the U.S. and 0.93 in Australia. At 0.70, however, this correlation is noticeable lower in the U.K. sample. Table 8 also reveals that our measures of operating performance, return on assets and return on equity, are not highly correlated with abnormal stock return performance, as measured by our three-factor alpha. In fact, the correlation between ROA and ROE and our multifactor alpha is just 0.12 and 0.05, respectively, in the U.S. In contrast, the correlation between ROA and alpha in our Australian and U.K. samples is 0.59 and 0.45, respectively. However, the correlation between ROE and alpha in the U.K. is a negative 0.12. Clearly, abnormal return performance and accounting based measures of operating performance are not close substitutes.

----- Table 8; Cross-Correlation Performance Indicator -----

Before turning to the second stage of our analysis where we regress excess returns on indicators of management intensity, we first examine the association among our intensity indicators and firm performance using several univariate relations. In Table 9, we report the mean values of several performance measures for two clusters of firms. The first cluster contains firms ranked in the bottom 25^{th} percentile based on trading activity as measured by TRADING. The second cluster contains firms ranked in the top 25^{th} percentile.

During 1996-1999, the most active U.S. firms produced an average annual return on assets of 3.74 percent. The corresponding ROA for the least active firms was 3.38 percent. The most active U.S. firms also produced a significantly higher average return on equity than the least active firms (7.32% vs. 0.35%), as well as a much higher total stock return. On a risk-adjusted basis, as captured by the single-factor and multifactor alphas, active firms also outperformed their less active

counterparts. Based on these sample statistics, the level of trading activity appears to be positively associated with performance.

The positive relation between trading activity and performance is less apparent, however, in the 2000-2003 subperiod. In the U.S. sample, more active firms did produce, on average, a higher return on equity. However, active firms produced both a lower return on assets and lower total stock return than less active firms. No significant difference is detectable in the U.S. single-factor or multifactor alphas.

The 2000-2003 results for Australia and U.K. firms reported in Table 9 are also inconclusive. More active U.K. firms produced a marginally higher average return on equity than did less active firms. There is no discernable difference in U.K. risk-adjusted return performance. The most active Australian firms did not provide improved operational performance in 2000-2003; however, active firms did produce higher average total returns as well as higher risk-adjusted returns.

----- Table 9; Performance and trading intensity -----

A correlation matrix that contains our multifactor alpha, intensity indicators, and the control variables used in our multivariate regressions is contained in Table 10. In this Table, the data from our three countries are aggregated. Several correlations are noteworthy. First, all three measures of management intensity are negatively correlated with firm size. TRADING and TURNOVER are also negatively correlated with dividend yield and earnings. With a correlation coefficient of 0.76 TRADING and TURNOVER are highly correlated, as expected. The correlation between TRADING and EXPANSION (ρ=0.37) is also positive and significant, whereas the correlation between TURNOVER and EXPANSION (ρ=-0.18) is negative.

----- Table 10; Correlation Matrix -----

What about the correlations between our multifactor alphas and our intensity indicators and control variables? As displayed in the last row of Table 10, alpha is negatively correlated with dividend yield and positively correlated with earnings per share, TRADING, and EXPANSION. We now turn to our regression analysis to determine if the univariate relations reported in Tables 9 and 10 are obtained in a multivariate estimation.

Regression Analysis of Management Intensity

Table 11a contains our multivariate regression results for U.S. firms using our multifactor alphas as the dependent variable. Results are reported for both the 1996-1999 and 2000-2003 subperiods.

The first model reported for each time period contains the results of regressing firm-level alphas on our set of control variables: firm size, debt ratio, dividend yield, earnings per share, price-earnings ratio, and the price-to-book ratio. In Models II, III, and IV, respectively, TRADING, TURNOVER, and EXPANSION are added to the set of control variables.

During the 1996-1999 subperiod, the estimated coefficient on Debt Ratio is consistently negative and statistically significant, suggesting higher leverage decreases risk-adjusted return performance, all else equal. None of the other control variables are statistically significant. The estimated coefficients on TRADING (Model II), TURNOVER (Model III), and EXPANSION (Model IV), although positive, can not be distinguished from zero. The adjusted R^2 ranges from 0.09 to 0.17 across the four model specifications.

----- Table 11; Multivariate Regression Results -----

The U.S. results for 2000-2003 are markedly different. First, the estimated coefficients on Debt Ratio are no longer distinguishable from zero. Second, the coefficients on firm size are uniformly negative and marginally significant, as are the coefficients on dividend yield. Moreover, the coefficients on earnings per share are now positive and highly significant. The addition of TRADING (Model II) produces a positive and statistically significant coefficient, as does the addition of EXPANSION (Model IV). These results suggest that the marginal return impact of management intensity is negative. However, the coefficient on TURNOVER (Model III) cannot be distinguished from zero. The adjusted R^2 for the four model specifications are considerably higher than the 1996-1999 period, ranging from 0.22 to 0.27.

Table 11b contains the regression results for our Australian and U.K. firms during the 2000-2003 subperiod. Similar to Table 11a, the first model reported for each country contains the results of regressing firm-level multifactor alphas on our set of control variables. In Australia, not a single control variable is statistically significant in any of the four specifications. Moreover, the estimated coefficients on TRADING, TURNOVER, and EXPANSION are all statistically insignificant. The adjusted R^2 range from 0.08 to 0.25. In the U.K., the estimated coefficients on the firm's debt ratio are positive and statistically significant in three of the four model specifications. None of the other control variables have statistically significant coefficients. More importantly, the estimated coefficients on TRADING, TURNOVER, and EXPANSION are statistically insignificant. No positive impact of management intensity on return performance can be discerned from Table 11. Although not reported in Table 11, we also searched for non-linear effects by squaring our intensity indicators and adding them to the regressions. None of the estimated coefficients on the squared terms were statistically significant, although their addition did eliminate the statistical significance of TRADING and EXPANSION in our 2000-2003 U.S. sample.

Our analysis thus far has not taken property type into account. This is not a problem if the property type in which a firm invests is unrelated to return performance or portfolio trading activities. However, returns often vary significantly across the various property types. Moreover, the degree of management required and the returns to scale also may vary across property types. To control for the property type focus of our sample firms, we also run our multivariate regressions with property type dummies as additional control variables. Due to sample size limitations, we could not add property focus control variables to our Australian or U.K. samples or to our U.S. regressions during the first subperiod.

The regression results for this extended model specification, combining the 2000-2003 data for all three countries, are provided in Table 12. Adding property focus control variables provides a noticeable increase in explanatory power with adjusted R^2 of 0.37 and 0.38. Nevertheless, the only significant property type variable is the hotel dummy, which is negative. Moreover, the estimated coefficients on TRADING and EXPANSION are no longer statistically significant.

----- Table 12; Multivariate Regression Results Including Property Type -----

In all, our excess return regression results suggest that it is difficult to explain firm-level variations in return outperformance on the basis of management intensity. Using multivariate regression specifications that do not control for property type, we find significant a statistically significant result only for TRADING and EXPANSION, and that only for U.S. property companies in the 2000-2003 subperiod. For the Australian and the U.K. firms in our sample, our management intensity indicators are not significantly related to excess return performance. Furthermore, when we add property type as a control variable to the model specifications, the statistical significance of TRADING and EXPANSION for the U.S. sample disappears, suggesting that it was the choice of property type and not the intensity of portfolio management that was the main driver of outperformance in the 2000-2003 subperiod.

Although not reported, our attempts to explain variation in operating performance were equally unsuccessful. Using our U.S. sample and 2000-2003 data, our property dummies and other control variables are able to explain 42 percent of the variation in ROA. However, the only variable with a statistically significant coefficient is earnings per share (t-statistic = 7.92). When separately added, TRADING and TURNOVER are, again, strikingly insignificant, although the coefficient on EXPANSION is positive and significant (t-statistic = 2.42).

The explanatory power of our ROE regressions are significantly less than the ROA specifications, with R^2 ranging from 0.06 to 0.07. Moreover, the coefficient on earning per share is no longer significant and even EXPANSION plays no significant role in explaining the cross section of ROEs in our U.S. sample.

Summary and Conclusion

This paper attempts to quantify the value added arising from the skills of active real estate portfolio managers by exploring a database of listed property companies for Australia, the United Kingdom and the United States. In the past, property companies in these three countries were generally not managed in an active fashion. Rather, RE companies were typically investment vehicles that provided investors access to a liquid and diversified property portfolio. In the last decade, however, public real estate firms in all three countries have become more actively managed and focused—either geographically and/or by property type.

We develop three indicators of portfolio management intensity, and investigate whether these indicators are related to various market- and accounting-based performance measures. More specifically, we analyze the relationship between management intensity and performance in two ways. First, we place property companies into quartiles on the basis of portfolio trading activity, and look at a set of performance indicators for the bottom and top quartile. None of these performance indicators shows a consistent relationship with trading activity. Return on equity is higher for actively trading U.S. property companies, but not for property companies in Australia and the U.K.

Second, we develop a multivariate regression model to explain excess stock return performance. This model controls for the variables which have been found in previous studies to be helpful in explaining the cross-section of excess returns (i.e., "alphas"). When the property type focus of the firm is included as a control variable, none of our indicators of portfolio management intensity are found to be statistically significant in explaining performance. Our attempts to explain variations in operating performance using our measures of management intensity are equally unsuccessful.

In summary, our empirical results suggest it is difficult for mangers of public real estate companies buying properties in private markets to generate outperformance on the basis of the active strategies quantified in this paper. This suggests that even if private commercial real estate markets do exhibit the persistent inefficiencies often attributed to them by practitioners, these inefficiencies may not be large enough to compensate investors for the additional trading costs associated with intensive portfolio management strategies.

References

Baker, Malcolm, Lubomir Litov, Jessica A. Wachter, and Jeffrey Wurgler, " Can Mutual Fund Managers Pick Stocks," 2004 Working Paper, Harvard Business School.

Bhidé, A., Return to Judgment, *Journal of Portfolio Management,* Winter 1994, 20, pp. 19-25.

Boer, D., Brounen, D. and Op 't Veld, H., Corporate Focus and Stock Performance: Evidence from International Real Estate Markets*, Working paper* University of Amsterdam, 2004.

Brooks, Chris and Sotiris Tsolacos, 2003, "International Evidence on the Predictability of Returns to Securitized Real Estate Assets: Econometric Models versus Neural Networks," *Journal of Property Research* 20, 133-155.

Cannon, S.E. and Vogt, S.C, REITs and Their Management: An Analysis of Organizational Structure, Performance and Management Compensation, *The Journal of Real Estate Research,* October 1994, 10, pp. 297-317.

Capozza, Dennis R. and Paul J. Seguin, "Focus, Ttransperency, and Value," *Real Estate Economics*, 1999, Vol. 27, No.1, pgs. 587-620.

Carhart, Mark, 1997, On Persistence in Mutual Fund Performance, *Journal of Finance* 52, 57–82.

Chen, Hsiu-Lang, Narasimhan Jegadeesh, and Russ Wermers, "The Value of Active Mutual Fund Management: An Examination of the Stockholdings and Trades of Fund Managers," *The Journal of Financial and Quantitative Analysis*, 2001.

Chen, K., R. Roll, and S. Ross, 1986, "Economic Forces and the Stock Market," *Journal of Business* 59, 383-403.

Chen, Yong, Wayne Ferson, and Helen Peters, "The Timing Ability of Fixed Income Mutual Funds," 2005 Working Paper, Boston College.

Cooper, Michael, David Downs, and Gary Patterson, 1995, "Asymmetric Information and the Predictability of Real Estate Returns," *Journal of Real Estate Finance and Economics* 20, 225-244.

Eichholtz, P.M.A., Koedijk, K. and Schweitzer, M., Global Property Investment and the Costs of International Diversification, *Journal of International Money and Finance,* June 2001, 20, pp. 349-366.

Engstrom, Stefan, "Costly Information, Diversification, and International Mutual Fund Performance," *Pacific-Basin Finance Journal*, 2003, Vol. 11, pgs 463-482.

Fama, E.F., Efficient capital markets: a review of theory and empirical work, *Journal of Finance,* 1970, 25, pp. 383-417.

Ferson, Wayne, and Campbell Harvey, 1991, "The Variation of Economic Risk Premiums," *Journal of Political Economy* 99, 385-415.

Gatzlaff, D.H. and Tirtiroglu, D., Real estate market efficiency: issues and evidence, *Journal of Real Estate Literature,* 1995, 3, pp.157-189.

Gordon, J., The Real Estate Portfolio Manager: DIPs, SIPs and REITs, *Journal of Real Estate Portfolio Management,* 1998, 4, pp. 169-172.

Gruber, Martin J., 1996, Another puzzle: The growth in actively managed mutual funds, *Journal of Finance* 51, 783–810.

Han, Jun, 1996, "Targeting Markets is Popular: A Survey of Pension Real Estate Investment Advisors," *Real Estate Finance*, Spring, 66-75.

Jensen, Michael C., 1968, The performance of mutual funds in the period 1945–1964, *Journal of Finance* 23, 389–416.

Jensen, C.M., Risk, the Pricing of Capital Assets, and the Evaluation of Investment Portfolios, *Journal of Business,* April 1968, 42, pp. 167-247.

Kallberg, J.G., Liu, C.L. and Trzcinka, C., The Value Added from Investment Managers: An examination of Funds of REITs, *Journal of Financial and Quantitative Analysis,* September 2000, 35, pp. 387-408.

Karolyi, G. A. and Anthony B. Sanders, 1998, "The Variation of Economic Risk Premiums in Real Estate Returns," *Journal of Real Estate Finance and Economics* 17, 245-262.

Kosowski, Robert, Allan Timmerman, Hal White, and Russ Wermers, 2004, "Can Mutual Fund 'Stars' Really Pick Stocks? New Evidence from a Bootstrap Analysis," Working Paper.

Li, Y. and Ko Wang, 1995, "The Predictability of REIT Returns and Market Segmentation," *Journal of Real Estate Research* 10, 471-482.

Ling, David C. and Andy Naranjo, 1997, "Economic Risk Factors and Commercial Real Estate Returns," *Journal of Real Estate Finance and Economics* 13, 283-307.

Ling, David C., Andy Naranjo, and Michael D. Ryngaert, 2000, "The Predictability of Equity REIT Returns: Time Variation and Economic Significance," *Journal of Real Estate Finance and Economics* 20, 117-136.

Liu, C.H. and J. Mei, 1992, "The Predictability of Returns on Equity REITs and Their Co-Movement with Other Assets," *Journal of Real Estate Finance and Economics* 5, 401-418.

Mei, J. and Crocker Liu, 1994, "The Predictability of Real estate Returns and Market Timing," *Journal of Real Estate Finance and Economics* 8, 115-135.

Solt, M.E. and Miller, N.G., Managerial Incentives: Implications for the Financial Performance of Real Estate Investment Trusts, *AREUEA Journal,* 1985, 13, pp. 404-423.

Stoesser, Joel W. and Robert C. Hess, 2000, "Differentiating Higher Return Strategies in Property Markets," Prudential Real Estate Investors, August (www.prudential.com).

Wermers, R., 2000, Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transaction Costs, and Expenses, *Journal of Finance* 55, pp. 1655-1695.

Wermers, Russ, 2003, "Are Mutual Fund Shareholders Compensated for Active Management 'Bets'"? Working Paper.

Table 1: Sample Statistics

Country	Number of Companies 1996-1999	Number of Companies 2000-2003	Average Mkt. Capitalization (USD) 2003	Debt-to-Assets 2003	Dividend Yield 2003
United States	41	146	$1.43 bln	51.9%	6.2%
Australia	4	21	$1.36 bln	28.7%	7.1%
United Kingdom	0	19	$1.43 bln	40.7%	3.4%

Debt-to-asset ratios are based on the book values of debt and assets. Dividend yields are calculated by dividing 2003 total dividends by 2002 year-end stock prices.

Table 2: Annualized Stock Return Performance Statistics

		Mean Total Return			Standard Deviation		
		96-03	96-99	00-03	96-03	96-99	00-03
US	*Sample*	12.3%	6.0%	19.5%	12.4%	11.2%	13.1%
	GPR General Index	12.2%	5.3%	19.3%	12.4%	13.0%	11.7%
	MSCI All Share Index	8.9%	26.6%	-5.1%	17.3%	14.9%	12.3%
UK	*Sample*			19.8%			14.8%
	GPR General Index			15.9%			17.5%
	MSCI All Share Index			-1.1%			16.2%
Australia	*Sample*			18.7%			15.8%
	GPR General Index			21.6%			16.2%
	MSCI All ShareIndex			10.4%			11.8%

All returns and standard deviations are based on monthly returns and calculated in U.S. dollars. Each country's GPR General Index is produced by Global Properties Research and is constructed to be representative of the movements in the country's real estate securities market. The MSCI All Share Index, produced by Morgan Stanley, is a broad-based measure of stock return performance in each country.

Table 3: Trading Activity

No. of Properties	1996	1997	1998	1999	2000	2001	2002	2003
United States mean	70	106	161	185	190	193	199	202
25th percentile	27	25	31	32	40	44	45	48
75th percentile	77	129	171	195	196	196	210	212
Australia mean					24	30	33	40
25th percentile					11	18	19	21
75th percentile					30	41	42	49
United Kingdom mean					79	72	69	69
25th percentile					35	35	45	49
75th percentile					67	70	77	75
No. of Properties Sold	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*
United States mean	2	2	2	8	13	9	9	10
25th percentile	0	0	0	0	1	1	1	1
75th percentile	1	2	2	6	10	9	11	10
Australia mean					1	1	1	2
25th percentile					0	0	0	0
75th percentile					1	2	1	2
United Kingdom mean					15	11	10	7
25th percentile					3	4	3	3
75th percentile					8	10	13	9
No. of Acquired Properties	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*
United States mean	12	26	33	17	8	10	12	11
25th percentile	0	2	4	1	0	0	0	1
75th percentile	16	35	40	11	8	8	10	9
Australia mean					3	8	4	9
25th percentile					0	1	1	2
75th percentile					4	9	4	11
United Kingdom mean					10	9	9	10
25th percentile					3	4	3	4
75th percentile					8	10	13	14
TRADING	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*
United States mean	0.35	0.44	0.36	0.16	0.16	0.15	0.13	0.15
25th percentile	0.07	0.12	0.12	0.05	0.03	0.02	0.03	0.04
75th percentile	0.48	0.61	0.49	0.21	0.18	0.15	0.19	0.17
Australia mean					0.22	0.31	0.15	0.27
25th percentile					0.06	0.10	0.05	0.06
75th percentile					0.23	0.46	0.18	0.34
United Kingdom mean					0.32	0.27	0.32	0.28
25th percentile					0.14	0.15	0.10	0.13
75th percentile					0.36	0.29	0.44	0.40

This table presents numerical information regarding portfolio size and trading activity of listed property companies. The Z-statistics in panel d. test for equality in means across both sub-periods, and the analysis is based on a common sample comparison for the periods 1996-1999 and 2000-2003. TRADING captures the number of properties purchased in a given year, plus the number of properties sold, relative to the average number of properties in the portfolio during the year.

Table 4: Portfolio Turnover

Value of Properties	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*
United States mean	795	1442	1625	1556	1755	1963	2059	2525
25th percentile	254	456	391	409	356	421	402	532
75th percentile	1115	1515	2008	2030	2211	2480	2610	3205
Australia mean					886	911	1122	1870
25th percentile					358	337	443	683
75th percentile					797	978	1126	1912
United Kingdom mean					2560	2664	2983	3376
25th percentile					466	512	634	691
75th percentile					3840	3909	4656	5233
Value of Sold Properties	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*
United States mean	36	36	38	84	132	98	104	168
25th percentile	0	0	0	0	0	2	2	5
75th percentile	21	22	17	73	113	87	119	177
Australia mean					23	33	19	82
25th percentile					0	0	0	0
75th percentile					35	32	31	63
United Kingdom mean					414	353	307	203
25th percentile					56	46	66	37
75th percentile					353	464	370	206
Value of Acquired Prop.	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*
United States mean	193	472	377	140	93	131	133	154
25th percentile	2	12	24	6	0	0	0	5
75th percentile	215	492	382	108	91	84	106	144
Australia mean					78	201	108	436
25th percentile					0	17	16	49
75th percentile					96	190	146	502
United Kingdom mean					293	286	236	255
25th percentile					49	41	34	28
75th percentile					353	446	338	332
TURNOVER	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*
United States	0.05	0.05	0.03	0.06	0.09	0.08	0.06	0.08
25th percentile	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01
75th percentile	0.06	0.03	0.02	0.07	0.11	0.08	0.10	0.09
Australia					0.04	0.04	0.03	0.04
25th percentile					0.00	0.00	0.00	0.00
75th percentile					0.07	0.08	0.06	0.07
United Kingdom					0.16	0.13	0.16	0.09
25th percentile					0.07	0.08	0.05	0.05
75th percentile					0.18	0.17	0.21	0.12

The analysis is based on a common sample comparison for the periods 1996-1999 and 2000-2003. The Z-statistics tests for equality in means across both subperiods. $TURNOVER_i$ is equal to dollar value of sales during time period *t* divided by the average dollar value of the portfolio or firm in period *t*.

Table 5: Portfolio Expansion Ratios

Expansion	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*
United States	0.37	0.60	0.48	0.18	0.05	0.05	0.03	0.04
25th percentile	0.04	0.14	0.10	0.00	-0.03	-0.03	-0.03	-0.04
75th percentile	0.50	0.71	0.49	0.19	0.07	0.06	0.04	0.06
Australia					0.12	0.30	0.11	0.25
25th percentile					-0.01	0.00	0.00	0.00
75th percentile					0.21	0.32	0.19	0.30
United Kingdom					0.08	0.08	0.05	0.05
25th percentile					-0.06	-0.03	-0.08	0.04
75th percentile					0.13	0.12	0.11	0.12

The expansion ratio, $EXPANSION_i$ captures the average annual increase in the number of properties owned by the firm over a *n* year sample period.

Table 6: Summary Statistics for Dependent Variables

		1996-1999	2000-2003		
		US	US	AU	UK
Stock Returns					
Jensen's	Mean	0.00	0.02	0.01	0.02
Alpha	Std. Dev.	0.01	0.07	0.01	0.00
	Minimum	-0.05	-0.01	0.00	0.01
	Maximum	0.01	0.81	0.03	0.03
	No. of firms	37	143	20	14
Multi-Factor	Mean	0.00	0.01	0.01	0.02
Alpha	Std. Dev.	0.01	0.03	0.01	0.01
	Minimum	-0.06	-0.04	-0.01	0.01
	Maximum	0.02	0.37	0.03	0.03
	No. of firms	37	143	20	14
Operating Performance					
Return on	Mean	5.2%	13.5%	9.0%	4.9%
Equity	Std. Dev.	14.0%	160.6%	1.1%	2.3%
	Minimum	-71.9%	-610.9%	7.3%	2.7%
	Maximum	17.2%	1796.7%	10.7%	11.6%
	No. of firms	38	145	20	16
Return on	Mean	3.2%	2.1%	6.3%	0.1%
Assets	Std. Dev.	1.9%	3.3%	0.8%	0.1%
	Minimum	-2.2%	-21.9%	5.1%	-0.2%
	Maximum	6.9%	11.2%	7.7%	0.3%
	No. of firms	38	145	20	16

Table 7: Explanatory Power of Stock Return Regression Models

1996-1999	One-factor	Two-factor	Three-factor
United States	0.05	0.10	0.15
2000-2003	One-factor	Two-factor	Three-factor
United States	0.01	0.03	0.05
Australia	0.32	0.34	0.35
United Kingdom	0.14	0.15	0.19

The one factor model regresses the excess total stock returns on the excess market return. The two factor model is extended by including the Fama French value factor (HML). The The three factor model is further extended by including the size factor (SMB)

Table 8: **Cross-Correlation Performance Indicator (00-03)**

	Multifactor Alpha		
	US	AU	UK
Local Single-Factor Alpha	0.95	0.93	0.70
Local Return on Assets	0.12	0.59	0.45
Local Return on Equity	0.05	0.32	-0.12

Table 9: Performance of Top and Bottom Clusters Based on TRADING

	1996-1999		2000-2003	
	bottom 25%	*top 25%*	*bottom 25%*	*top 25%*
United States				
Return on Assets	3.38	3.74	2.11	1.30
Return on Equity	0.36	7.32	-5.21	3.36
Total Stock Return	3%	14%	20%	16%
Single-factor Alpha	-0.01	0.00	0.02	0.02
Multifactor Alpha	-0.01	0.01	0.01	0.01
Australia				
Return on Assets			6.15	6.17
Return on Equity			8.87	8.65
Total Stock Return			15%	23%
Single-factor Alpha			0.00	0.01
Multifactor Alpha			0.00	0.01
United Kingdom				
Return on Assets			0.11	0.09
Return on Equity			4.13	4.91
Total Stock Return			18%	17%
Single-factor Alpha			0.01	0.01
Multifactor Alpha			0.01	0.01

Table 10: Correlation Matrix Performance, Control Variables and Activity Ratios (00-03)

	Size	DR	DY	EPS	PER	PtB	TrR	TuR	ExR	Alpha
Size	1.00									
Debt Ratio	-0.06	1.00								
Dividend Yield	-0.15	-0.03	1.00							
Earnings Per Share	0.08	-0.22	0.20	1.00						
Price-Earnings Ratio	0.03	-0.02	-0.15	-0.03	1.00					
Price-to-Book Ratio	0.04	-0.16	-0.09	0.01	0.04	1.00				
TRADING	-0.24	0.06	-0.21	-0.22	0.02	0.04	1.00			
TURNOVER	-0.13	0.06	-0.25	-0.26	0.00	0.03	0.76	1.00		
EXPANSION	-0.16	0.04	0.03	0.04	0.07	0.03	0.37	-0.18	1.00	
Alpha (multifactor)	-0.12	-0.02	-0.20	0.38	0.00	-0.04	0.20	-0.03	0.24	1.00

Table 11a: Multivariate Regression Output on Three-Factor Alpha

United States	1996-1999				2000-2003			
	I	II	III	IV	I	II	III	IV
Intercept	0.020 (1.66)	0.013 (1.06)	0.016 (1.35)	0.016 (1.28)	0.008 (1.78)	0.003 (0.71)	0.007 (1.60)	0.008 (1.89)
Size	0.001 (0.57)	0.001 (0.03)	0.001 (0.30)	0.001 (0.15)	-0.001 (-2.25)	-0.001 (-1.90)	-0.001 (-2.25)	-0.001 (-2.32)
Debt Ratio	-0.052 (-2.55)	-0.047 (-2.43)	-0.052 (-2.66)	-0.049 (-2.44)	0.004 (0.62)	0.004 (0.59)	0.004 (0.61)	0.003 (0.50)
Dividend Yield	0.001 (0.03)	0.001 (0.06)	0.001 (0.09)	0.001 (0.14)	-0.001 (-2.38)	-0.001 (-1.88)	-0.001 (-2.28)	-0.001 (-2.56)
Earnings per Share	0.002 (0.46)	0.002 (0.58)	0.003 (0.81)	0.002 (0.14)	0.006 (6.51)	0.007 (7.08)	0.006 (6.41)	0.006 (6.34)
Price-Earnings Ratio	-0.001 (-0.02)	-0.001 (-0.09)	-0.001 (-0.32)	0.001 (0.13)	-0.001 (-0.04)	-0.001 (-0.03)	-0.001 (-0.03)	-0.001 (-0.29)
Price-to-book Ratio	0.000 (1.02)	0.000 (1.22)	0.001 (1.22)	0.001 (1.10)	-0.001 (-0.53)	-0.000 (-0.66)	-0.001 (-0.54)	-0.001 (-0.66)
TRADING		0.020 (1.83)				0.020 (3.11)		
TURNOVER			0.066 (1.67)				0.003 (0.30)	
EXPANSION				0.009 (0.98)				0.017 (2.97)
N	34	34	34	34	135	135	135	135
Prob (F-stat)	0.19	0.10	0.12	0.22	0.00	0.00	0.00	0.00
R^2 adjusted	0.09	0.17	0.15	0.09	0.23	0.27	0.22	0.27

The three factor alpha is the dependent variable. Size is computed as the total book value of assets, Debt ratio is the percentage of total debt of total assets, the dividend yield is the sample average of annual dividends divided by the end-of year close prices etc.

Table 11b: Multivariate Regression Output on Three-Factor Alpha

	Australia (2000-2003)				UK (2000-2003)			
	I	II	III	IV	I	II	III	IV
Intercept	-0.023 (-0.57)	-0.023 (-0.53)	-0.014 (-0.36)	-0.029 (-0.66)	-0.027 (-1.59)	-0.026 (-1.46)	-0.025 (-1.40)	-0.022 (-1.24)
Size	-0.001 (-0.89)	-0.001 (-0.81)	-0.001 (-0.80)	-0.001 (-0.88)	-0.001 (1.30)	-0.001 (0.92)	-0.001 (-1.11)	-0.001 (1.47)
Debt Ratio	-0.010 (-1.83)	-0.098 (-1.73)	-0.100 (-1.87)	-0.105 (-1.85)	0.060 (3.06)	0.055 (2.53)	0.055 (2.31)	0.041 (1.28)
Dividend Yield	0.006 (1.82)	0.006 (1.58)	0.004 (0.93)	0.007 (1.85)	0.002 (1.63)	0.002 (1.38)	0.002 (1.35)	0.002 (1.34)
Earnings per Share	0.144 (1.29)	0.135 (1.14)	0.060 (0.52)	0.144 (1.26)	-0.009 (-1.33)	-0.007 (-0.93)	-0.007 (-0.96)	-0.008 (-1.24)
Price-Earnings Ratio	0.001 (0.68)	0.000 (0.39)	0.001 (0.12)	0.001 (0.83)	0.001 (1.16)	0.001 (1.21)	0.001 (1.15)	0.001 (0.93)
Price-to-book Ratio	-0.013 (-0.37)	-0.001 (-0.27)	0.007 (0.22)	-0.012 (-0.33)	0.012 (0.96)	0.015 (1.04)	0.015 (0.99)	0.017 (1.15)
TRADING		0.007 (0.37)				-0.008 (-0.53)		
TURNOVER			0.093 (1.63)				-0.012 (-0.42)	
EXPANSION				-0.008 (-0.54)				0.019 (0.77)
N	19	19	19	19	14	14	14	14
Prob (F-stat)	0.26	0.37	0.18	0.36	0.19	0.29	0.30	0.26
R^2 adjusted	0.14	0.08	0.25	0.08	0.32	0.25	0.24	0.28

The three factor Alpha is the dependent variable. Size is computed as the total book value of assets, Debt ratio is the percentage of total debt of total assets, the dividend yield is the sample average of annual dividends divided by the end-of year close prices etc.

Table 12: Multivariate Regression Output on Three-Factor Alpha

	1996-1999				2000-2003			
United States	I	II	III	IV	I	II	III	IV
Intercept					0.014 (3.08)	0.011 (2.17)	0.016 (3.23)	0.014 (3.10)
Office-dummy					-0.003 (-0.94)	-0.003 (-0.83)	-0.003 (-0.92)	-0.003 (-0.85)
Retail-dummy					0.003 (0.94)	0.002 (0.80)	0.003 (0.90)	0.002 (0.60)
Residential-dummy					-0.003 (-0.90)	-0.003 (-0.82)	-0.003 (-0.92)	-0.002 (-0.79)
Industrial-dummy					0.001 (0.20)	0.001 (0.33)	0.001 (0.10)	0.003 (0.06)
Hotel-dummy					-0.013 (-3.98)	-0.013 (-3.34)	-0.015 (-4.09)	-0.013 (-3.84)
Other-dummy					0.003 (0.70)	0.003 (0.89)	0.002 (0.50)	0.002 (0.65)
Size					-0.001 (-1.47)	-0.001 (-1.38)	-0.001 (-1.53)	-0.001 (-1.56)
Debt Ratio					0.001 (0.13)	0.001 (0.16)	0.001 (0.09)	0.001 (0.02)
Dividend Yield					-0.001 (-3.28)	-0.001 (-2.97)	-0.001 (-3.42)	-0.001 (-3.31)
Earnings per Share					0.004 (4.76)	0.005 (4.92)	0.005 (4.11)	0.004 (4.72)
Price-Earnings Ratio					-0.001 (-0.42)	-0.001 (-0.40)	-0.001 (-0.46)	-0.001 (-0.56)
Price-to-book Ratio					-0.001 (-0.96)	-0.001 (-0.96)	-0.001 (-0.96)	-0.001 (-1.01)
TRADING						0.008 (1.23)		
TURNOVER							0.008 (1.08)	
EXPANSION								0.010 (1.68)
N					135	135	135	135
Prob (F-stat)					0.00	0.00	0.00	0.00
R^2 adjusted					0.37	0.37	0.37	0.38

The three factor Alpha is the dependent variable. Size is computed as the total book value of assets, Debt ratio is the percentage of total debt of total assets, the dividend yield is the sample average of annual dividends divided by the end-of year close prices etc.