The Relationship between Size and Return for Foreign Real Estate Investments

Executive Summary. *In this study, we utilize a relatively new database to examine whether small foreign real estate firms have higher returns than large foreign real estate firms. We examine this issue from the perspective of a U.S. investor who forms portfolios of international real estate firms on the basis of U.S. dollar market value of equity. Using eleven years of foreign real estate data for more than 1200 observations in twenty countries, we find that large firms have higher returns and lower risk than small firms. These results hold when returns are denominated in either local currency or dollars. Further, the relationship between firm size and return is monotonic across portfolio groupings.*

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INTRODUCTION

Previous research has documented a small-firm effect for U.S. stocks. Small U.S. firms, that is those with low-market values of equity, have been shown to outperform large capitalization firms by Banz (1981), Fama and French (1992, 1995) and Kothari, Shanken and Sloan (1995). The small-firm effect has been shown to exist for international stocks by Sinquefield (1996) who finds diversification benefits when the investor concentrates on small-firm stocks overseas.

The small-firm effect has also been documented for U.S. Real Estate Investment Trusts (REITs) by McIntosh, Liang and Tompkins (1991). Using data from 1974-88, they find that small capitalization REITs have higher returns than large capitalization REITs without an accompanying increase in risk. Further, the superior performance of small REITs does not appear to be due to performance mismeasurement related to infrequent trading or transactions costs. Though the returns to international real estate firms have been documented by Sweeney (1989), Giliberto (1990), Liu and Mei (1993), and Eichholtz (1996), there is a lack of evidence as to whether small foreign real estate firms outperform large real estate firms.

In this study, we utilize a relatively new database to examine whether small foreign real estate firms have higher returns than large foreign real estate firms. We examine this issue from the perspective of a U.S. investor who forms portfolios of international real estate firms on the basis of dollar market value of equity. The returns are

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measured in both dollars and local currency for firms in over twenty foreign countries in eleven different years. Interestingly, the returns for small firms are less than those for large firms. Further, the returns for large foreign real estate firms are less risky than those for small firms. These results hold when returns are denominated in either local currency or dollars.

This study is organized as follows. The next section discusses the data and methodology used. The third section discusses the results and the final section provides concluding remarks.

Exhibit 1: Distribution of Sample by SIC Code

SIC Code	No. of Industry	No. of Observs	Firms
6500	Real Estate	963	176
6510	Real Estate Operators Lessor	6	1
6512	Operators of Nonresidential Buildings	144	28
6513	Operators of Apartment Buildings	16	2
6519	Lessors of Real Property	4	1
6530	Real Estate Agents and Managers	25	4
6532	Real Estate Dealers	52	7
6550	Land Subdividers and Developers	46	12
Total		1256	231

DATA AND METHODOLOGY

We utilize Standard and Poor's Global Vantage database to measure the returns from foreign, publicly traded firms whose primary business is real estate. The database provides the monthly stock prices, dividends and split information necessary for return calculations. The period of return data examined is from January 1985 to June 1996. We calculate both dollar- and local foreign currency-denominated returns since we examine the risk and return profile of international investments from a U.S. perspective and wish to examine the risk from exchange-rate changes separately. Exchange-rate data are available from the Federal Reserve of Chicago's worldwide web site. We include Canada and all the countries in Morgan Stanley's EAFE index with available data.

The Global Vantage database also provides price and share information necessary for identifying small and large firms as well as SIC codes necessary for industry identification. Firms must be classified in the two-digit SIC code 65 (Real Estate) to be considered for inclusion in this study.[1] A summary of the observations and firms in each SIC code is presented in Exhibit 1. The majority of the observations, 963 of a total 1256, are classified in the general Real Estate category. Note that these 963 observations represent 176 firms as most firms appear in more than one year in the eleven years in this study. The next largest classification, SIC code 6512 (Operator of Nonresidential Buildings), is represented by 144 observations and 28 firms.

We examine whether an investor in foreign real estate could enhance his/her returns by basing portfolio formation on the market value of equity. We include firms with the four most common fiscal year-ends: March, June, September, and December.[2] The market value of equity is calculated in U.S. dollar terms to facilitate international portfolio formation.[3] Each year the investor ranks the firms on the basis of their U.S. $ market value of equity and forms four equally weighted portfolios.[4] Quartile 1 firms have the lowest U.S. $ market value of equity, with increasingly larger firms in Quartiles 2 and 3. Quartile 4 firms have the highest U.S. $ market value of equity and are referred to as large firms. Firms in the lowest quartile, Quartile 1, are referred to as small firms.

Annual holding period returns for the portfolios are measured using prices that are adjusted for stock splits and dividends paid during the return measurement period.[5] We expect the greatest discrepancy in returns to exist when comparisons are made between Quartile 1 and Quartile 4 observations. These firms lie at the extreme of equity size and if a pattern exists between size classifications and future stock returns, it should be reflected in the returns for these firms. Hence, subsequent statistical tests of differences in group means focus on Quartiles 1 and 4.

The number of firms and observations within each country are listed in Exhibit 2. The greatest number of observations and firms are from Great Britain (372 and 59), followed by Hong Kong, France, Japan, and Singapore; the smallest number, from Belgium, Switzerland, Austria, Finland, and the Netherlands. The countries with the three largest median dollar market values of equity for this sample of real estate firms are Hong Kong, Japan and Spain. The countries with the three smallest sets of real estate firms are Ireland, Finland and New Zealand.

Exhibit 2: Summary Statistics for Sample of Foreign Real Estate Returns

Country	No. of Observs	No. of Firms	Median Market Value of Equity in Millions of U.S.$	Mean Annual Return in Local Currency (Std Dev.)	Mean Annual Return in U.S.$ (Std Dev.)
Australia	70	11	146.20	0.0754 (0.5741)	0.0844 (0.6011)
Austria	5	1	62.37	–0.1453 (0.1606)	–0.1123 (0.1846)
Belgium	3	1	327.21	0.0346 (0.0832)	0.0830 (0.1172)
Canada	35	8	103.56	0.0229 (0.3182)	0.0051 (0.3244)
Finland	7	4	40.44	0.1307 (0.6424)	0.1906 (0.6645)
France	161	30	366.13	0.0304 (0.2370)	0.0623 (0.2666)
Germany	34	7	137.29	0.0148 (0.2070)	0.0539 (0.2614)
Hong Kong	186	31	608.23	0.2317 (0.4478)	0.2327 (0.4488)
Ireland	15	3	19.91	–0.0869 (0.4146)	–0.0768 (0.4434)
Italy	35	7	105.03	–0.0920 (0.4056)	–0.1079 (0.4231)
Japan	130	14	551.43	0.0715 (0.4158)	0.0991 (0.4044)
Malaysia	43	14	154.31	0.3183 (0.6575)	0.3253 (0.6369)
Netherlands	7	6	443.34	0.0417 (0.1062)	–0.0230 (0.1101)
New Zealand	13	5	57.54	0.0199 (0.4378)	0.0648 (0.4715)
Norway	12	2	126.84	–0.0027 (0.4588)	–0.0213 (0.3695)
Singapore	72	14	349.50	0.1663 (0.3758)	0.2173 (0.3942)
Spain	11	4	546.50	–0.1393 (0.3580)	–0.1264 (0.4001)
Sweden	39	9	61.08	–0.0561 (0.3561)	–0.0567 (0.3738)
Switzerland	6	1	407.85	0.1079 (0.2574)	0.1245 (0.1442)
United Kingdom	372	59	144.39	0.0208 (0.4307)	0.0138 (0.4172)

Examining the mean returns in local currency for the complete sample over the entire time period, returns exceed 10% in five countries: Malaysia, Hong Kong, Singapore, Finland, and Switzerland. These returns exceed 10% when measured in U.S. dollars as well. For Malaysia, the mean returns exceed 30% in local currency and dollar terms and in Hong Kong the returns exceed 20%. However, in six countries a real estate investor would have experienced negative returns. In Austria, Spain, Ireland, Italy, Norway, and Sweden, mean returns are less than zero in both local currency and dollar terms. In the Netherlands, mean returns are positive in local currency terms but negative in dollar terms. Using the standard deviation of local currency and dollar returns as a measure of risk, the countries with the riskiest returns are Malaysia, Finland and Australia. The least risky returns are in Belgium, the Netherlands and Austria.

RESULTS

As discussed in the previous section, our methodology assumes that an investor ranks foreign firms on the basis of their U.S. dollar market value of equity and forms four equally weighted quartiles. The representation of countries in each quartile over all years of the study is shown in Exhibit 3. Observations from Great Britain dominate Quartile 1, the small firms, as well as

Exhibit 3: Distribution of Size Portfolios by Country

Country	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Australia	24	17	24	5
Austria	1	4	0	0
Belgium	0	0	3	0
Canada	11	16	8	0
Finland	4	3	0	0
France	4	40	61	56
Germany	9	11	6	8
Hong Kong	25	29	35	97
Ireland	13	2	0	0
Italy	13	13	7	2
Japan	3	27	29	71
Malaysia	8	20	13	2
Netherlands	2	0	2	3
New Zealand	4	6	3	0
Norway	5	3	4	0
Singapore	13	12	22	25
Spain	0	2	3	6
Sweden	19	5	7	8
Switzerland	0	0	6	0
United Kingdom	137	106	79	50

Exhibit 4: Distribution of Size Portfolios by SIC Code

SIC Code	Quartile 1	Quartile 2	Quartile 3	Quartile 4
6500	237	241	228	257
6510	0	0	6	0
6512	28	41	52	23
6513	0	5	1	10
6519	4	0	0	0
6530	7	7	0	11
6532	9	5	8	30
6550	10	17	17	2

Quartile 2. Observations in Quartile 3 are represented largely by Great Britain, France and Hong Kong. The large-firm quartile, 4, is represented largely by Hong Kong, Japanese and then French real estate firms.

In Exhibit 4, we present the distribution of observations within each quartile classified by their SIC code. As in Exhibit 1, the majority of observations are classified under general real estate, SIC 6500. In Exhibit 4, this classification is fairly evenly spread across quartiles, with Quartile 1, the small firms, containing 237 observations and Quartile 4, the large firms, containing 257. The SIC classification with the second largest number of observations is SIC 6512. Within this SIC classification, the observations are also fairly evenly distributed across quartiles, as Quartile 1 contains 28 observations and Quartile 4 contains 23 observations. In general, the statistics shown in Exhibit 4 indicate that the distribution of observation within SIC codes is fairly evenly dispersed across each quartile.

The returns and standard deviation of annual returns in local currency terms are shown in Exhibit 5 for the various quartiles. The median market value of equity for large firms, Quartile 4, is $904.78 million, which is more than thirty times larger than the size of Quartile 1 firms of $27.81 million. The mean return for Quartile 4 firms is 10.75% while for small firms it is only 0.17%. Note that the median returns demonstrate a similar pattern as large firms have higher median returns as well. In fact, the median return for small international real estate firms is negative at –5.50%. This return pattern is in contrast to the results of Banz (1981), Fama and French (1992, 1995) and Kothari et al. (1995) who find that small U.S. industrial firms outperform large firms as well as that of McIntosh et al. (1991) who also find higher small-firm returns for U.S. REITs. Additionally, the relationship between firm size and returns documented here is monotonic in that Quartile 4 firms have the highest returns, followed

Exhibit 5: Risk and Return for Size Portfolios in Local Currency

	No. of Observs	Median Market Value of Equity in Millions of U.S.$	Mean Annual Return in Local Currency	Median Annual Return in Local Currency	Std Dev. of Returns
Quartile 1 (small firms)	295	27.81	0.0017	–0.0550	0.4775
Quartile 2	316	142.59	0.0781	0.0020	0.4476
Quartile 3	312	350.08	0.0945	0.0426	0.3903
Quartile 4 (large firms)	333	904.78	0.1075	0.0512	0.3779

	Diff. in Mean Return	Two Sample t-Stat. for Test of Means	Two sample t-Stat for Test of Medians	F-Stat. for Equality of Variances
Comparison of Returns for Quartile 1 and Quartile 4 Firms	0.1058	3.0517 (0.0024)	3.4658 (0.0006)	1.60 (0.0001)

p-values are in parentheses

Exhibit 6: Risk and Return for Size Portfolios in U.S. Dollars

	No. of Observs	Median Market Value of Equity in Millions of U.S.$	Mean Annual Return in U.S.$	Median Annual Return in U.S.$	Std Dev. of Returns
Quartile 1 (small firms)	295	27.81	0.0039	-0.0514	0.4893
Quartile 2	316	142.59	0.0866	0.0445	0.4370
Quartile 3	312	350.08	0.1071	0.0521	0.3963
Quartile 4 (large firms)	333	904.78	0.1220	0.0741	0.3788

	Diff. in Mean Return	Two Sample t-Stat. for Test of Means	Two sample t-Stat for Test of Medians	F-Stat. for Equality of Variances
Comparison of Returns for Quartile 1 and Quartile 4 firms	0.1181	3.3501 (0.0009)	4.2936 (0.0001)	1.67 (0.0001)

p-values are in parentheses

by Quartile 3 firms, Quartile 2 firms, and lastly, Quartile 1 firms. This pattern also holds for median returns. Further, the difference in returns between small and large firms is statistically significant at a 1% level, using both *t*-tests of means and medians.[6]

In addition to their finding that small U.S. REITs have higher returns than large REITs, McIntosh et al. also find lower risk for small firms. In the case of foreign real estate firms here though, large firms have higher returns as well as lower risk. Examining the standard deviation of returns in Exhibit 5, the dispersion in Quartile 4 returns is lower than that for Quartile 1 returns. Further, the relationship between firm size and risk is monotonic as Quartile 4 firms have the lowest risk, Quartile 3 the next highest risk, and so on. As the *F*-test reported at the bottom of the exhibit indicates, the difference in the variance of returns between small and large firms is significantly different at a 1% level.

Though the evidence indicates that large international real estate firms outperform small firms on the basis of risk and return in local currency terms, it is possible that these return discrepancies could be due to differences in inflation among countries. To control for this possibility and also to examine the return differences from a U.S. investor's point of view, we present results denominated in U.S. dollars in Exhibit 6. Again though, the results indicate that large international real estate firms outperform small firms. The mean annual return difference between Quartile 1 and Quartile 4 firms is nearly 12% when measured in U.S. dollar terms. The median returns for large firms are also larger as Quartile 4 firms have a median return of 7.41% and Quartile 1 firms have a median return of –5.14%. Additionally, the relationship between firm size and U.S. dollar return is monotonic for both mean and median returns. As was the case of local currency returns, these return differences between Quartile 1 and Quartile 4 firms are significant at a 1% level using both *t*-tests of means and medians. Examining the standard deviation of U.S. dollar returns, the relationship between firm size and risk is monotonic as large firms have the lowest risk, Quartile 3 the next highest, and so on. The difference in the variance of returns between Quartile 1 and Quartile 4 firms is statistically different by *F*-test at a 1% level. Overall, these dollar-denominated risk and return results confirm the results presented in local currency, that is, large international real estate firms outperform small firms on the basis of both risk and return.[7,8]

CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

Using eleven years of foreign real estate data for more than 1200 observations in twenty countries, we find that firms with large market value of

equity have higher returns and lower risk than small firms. The relationship between firm size and return as well as risk is monotonic across quartile groupings. This relationship is present when returns are measured in both local currency and U.S. dollar terms. Further, the return and risk differences between large firms and small firms is statistically significant.

The results presented here are interesting in that they contrast with the results of previous studies of U.S. industrial firms and REITs. Here large foreign real estate firms outperform small foreign real estate firms on the basis of both risk and return while McIntosh et al. find the opposite for U.S REITs. Institutional and market structure differences between U.S and foreign real estate firms may explain this difference. Though the exploration of such differences are beyond the scope of this study, this area would be interesting for future research.

NOTES

1. Standard and Poor's assigns industry classifications for foreign firms using the Standard Industrial Classification codes.
2. There are 47 firms and 307 observations with March fiscal year-ends, 36 firms and 235 observations with June fiscal year-ends, 21 firms and 106 observations with September fiscal year-ends, and 127 firms and 608 observations with December fiscal year-ends. Though December fiscal year-ends are the most common in the majority of countries, June fiscal year-ends predominate in Australia and March fiscal year-ends predominate in Japan.
3. The methodology we use assumes that the investor calculates the market value of equity six months after the end of the fiscal year. This six-month lag ensures that the market value of equity is calculated independent of any short-term price fluctuations caused by the release of earnings or other accounting information.
4. The number of observations in each portfolio formation year are as follows: 9 in 1985, 48 in 1986, 67 in 1987, 97 in 1988, 119 in 1989, 131 in 1990, 144 in 1991, 152 in 1992, 152 in 1993, 168 in 1994, and 169 in 1995.
5. We use holding period returns instead of cumulating monthly returns because Conrad and Kaul (1993) show that cumulating monthly returns over an extended period results in an upward bias that is greater for low-priced firms. When calculating the holding period return, we assume that dividends are not reinvested when received. The returns for firms that are delisted during the measurement period are measured until the delisting month with the implicit assumption that the investor reinvests the proceeds equally among the rest of the portfolio.
6. The *t*-test of medians is equivalent to the nonparametric Wilcoxon rank sum test statistic.
7. An alternative explanation for these results is that one country, Hong Kong, has influenced the results. Hong Kong firms have the greatest number of observations in Quartile 4 and the returns for Hong Kong real estate exceed 20%, overall. However, we rerun these tests excluding Hong Kong and the results (available upon request) are not qualitatively different.
8. We also measure firm size using the U.S. dollar value of total assets. Small firms again have lower mean returns (0.0785 in U.S. dollar returns) than large firms (0.1157). However, the risk of returns is somewhat lower for small firms (standard deviation of 0.4339) than it is for large firms (standard deviation of 0.4434).

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