Journal Of Financial And Strategic Decisions
Volume 11 Number 1 Spring 1998

AN EMPIRICAL STUDY OF THE IMPACT OF FOREIGN OWNERSHIP ON THE VALUES OF U.S. COMMERCIAL PROPERTIES

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Abstract

Foreign investment in U.S. real estate increased substantially in the decade of the 1980s. Prior research has focused on the domestic U.S. factors influencing real estate prices and rents. This study empirically investigates the impact on prices of U.S. commercial properties of buying and selling by foreign investors. It was found that foreign investors buying properties was a statistically significant determinant of property values, in addition to property type, building size, capitalization rate, expense growth rate, and occupancy rate. The sale of property by foreign investors was not found to be statistically significant.

INTRODUCTION

In the decade of the 1980s, investors from outside the United States, largely from Europe and Japan, were investing large sums in prime commercial real estate in U. S. markets. Several articles were published in the real estate literature discussing the significance of the globalization of property markets in the U.S. As early as 1980 Roulac [13] discussed the increasing foreign investment in U.S. real estate and provided advice concerning the investment process for foreign investors. Hines [7] discussed the significance of the international market for real estate investment. She pointed out that much of the flow of investment funds has come from Europe, Canada and Japan and that funds had been invested not only in New York and Los Angeles, but had filtered down to other major urban areas. Additionally, foreign investors have spread their funds among a wide variety of properties-- office space, residential developments, retail units and others (Hines [7]). Orth [11] published an empirical examination of Japanese investment in U.S. properties. Japanese investment was about $1.8 billion in 1985 and rose, one year later, to $5.7 billion. In 1988 Japanese investors had purchased $16.5 billion in U.S. real estate (Orth [11]). Japanese investors initially concentrated on real estate in the largest two cities, but began, later, to expand their investments into small cities. With the globalization of real estate investing, the values of U.S. properties would, doubtless, be affected. The movement of foreign investors into U.S. markets was expected to have an important positive impact on the prices of commercial properties in many U.S. cities (Malin [9]).

Past studies in real estate have examined the determinants of rents and values of the different types of properties. Attebury and Rutherford [1], Fehrebach, Rutherford and Eakin [2], Hughes [8] and Wheaton [18] studied the factors influencing the income and values of industrial properties. Bernes and Mitchell [2], Guntermann and Norrbin [6], and Sirmans, Sirmans and Benjamin [17] examined the determinants of apartment rents. Glascock, Jahanian and Sirmans [5] empirically studied office property rent determinants. Sirmans and Guidry [16] examined the determinants of shopping center rents. Dobson and Goddard [3] empirically examined the determinants of prices of commercial real estate in general. These studies cited have all concentrated on the U.S. market and domestic determinants of values and rents. In the international aspects of property markets, Myer, He and Webb [10] studied the impacts of the disposition of real estate by foreign investors on corporate shareholder wealth, and Ziobrowski and Boyd [19] studied the relationship of financial leverage on investment in U.S. real estate by foreign investors. Ziobrowski and Curcio [20] found that adding foreign real estate would improve real estate portfolio returns. However, there has been little empirical attention paid to the economic impact of foreign investors on U.S. property values in existing studies.

*The University of Tennessee-Martin
The funding for the research was provided by a grant from The University of Tennessee-Martin Research Grant Fund

Given the extensive foreign involvement and the expected lasting impact on real estate values (Hines [7], Orth [11], Malin [9]) during the 1980s in U.S. real estate, it is worthwhile to examine the economic influence that foreign investors have had on U.S. properties. With foreign investors entering U.S. property markets in the 1980s, the increase in the number of buyers in the market could be expected to raise the demand for commercial properties. All other things constant, the increased demand for existing properties should have resulted in higher prices. With the billions of dollars of commercial properties bought by Japanese and European investors (Orth [11]), foreign investors should be another significant factor affecting property values in addition to the property and financing characteristics found by past studies.

Even though individual and institutional investors may not deal directly with foreign investors, the presence of such investors as buyers can raise the prices of commercial properties in the markets in which they participate. The prices of properties, in turn, influence the rate of return and future growth in value of properties for all investors--foreign, domestic, institutional, and individual. The presence of foreign investors as sellers of properties will increase the number of sellers in the market, which in turn, will increase the supply of properties. Consequently, prices would be negatively affected. To the extent that foreign investors are a significant determinant of property values, an investor evaluating a property would want to consider all the important determinants of commercial real estate prices, including the impact of the presence of foreign investors in the market.

The purpose of this study is to provide an empirical examination of the impact of foreign investment on the prices of U.S. commercial real estate. The main hypothesis to be tested is that foreign ownership (that is, foreign purchases of U.S. properties) has had a significant and positive effect on U.S. commercial property prices. The null hypothesis is that the impact on prices of commercial properties purchased by foreign investors is not significantly different from zero. A second hypothesis is that foreign disinvestment of U.S. commercial properties (that is, sales by foreign owners of U.S. properties) has produced a significant and negative effect on the prices of those properties. In other words, properties sold by foreign investors were at lower prices than properties sold by U. S. investors. The null hypothesis is that the impact on prices of commercial properties sold by foreign investors is not significantly different that zero.

DATA AND METHODOLOGY

The data for the empirical analysis was taken from the *Investment Real Estate Financing* database of the National Association of Realtors for 1990 through 1992. The database consists of properties throughout the United States, including office buildings, apartments, manufacturing facilities, warehouses, resort, retail, hotel and motel properties. The database also includes property financial and owner characteristics. Ordinary least squares regressions were run using the time series data applying the following two equations:

Equation 1

$$SPSF_t = a_0 + b_1 BUYER + b_2 SELLER + e_t$$

where:

$SPSF_t$ = sales price of property t, per square foot,
a_0 = intercept
$BUYER$ = 1 if the property buyer is a foreign investor, zero if domestic investor,
$SELLER$ = 1 if the property seller is a foreign investor, zero if domestic investor,
e_t = error term.

Equation (1) was applied to estimate the impact of the purchase and sale of properties by foreign investors on the sales prices of properties independent of the influence of other factors, financial or economic.

The second empirical model includes variables to control for other determinants of value that have been suggested or found to be significant in other studies in affecting the prices of commercial properties:

Equation 2

$$SPSF_t = a_0 + B_1 BUYER + B_2 SELLER + B_3 CAP + B_4 EXPGR + B_5 OCC + B_6 INCGR + B_7 SIZE + B_8 RETAIL + B_9 OFF + B_{10} IND + e_t$$

where:

CAP = capitalization rate of property *t*,
OCC = occupancy rate of property *t*,
EXPGR = growth rate in operating expenses of property *t*,
INCGR = growth rate in gross income of property *t*,
SIZE = total square feet of property *t*.
RETAIL = 1 if property *t* is retail, zero otherwise,
OFF = 1 if property *t* is office building, zero otherwise,
IND = 1 if property t is industrial property, zero otherwise,

All other variables are as defined for equation (1). The specifications for each variable are determined in the database.

In equations (1) and (2) *BUYER* and *SELLER* are dummy variables for foreign owners of properties. The database specified the origin of property buyers and sellers as either domestic, foreign, or both domestic and foreign. The sample included only properties that were purchased or sold by either U.S. or foreign investors.

Control variables were included in equation (2) as additional factors that determine the prices of commercial properties. The variables specified were selected based on two criteria. First, variables were included if previous studies have found the variables to be statistically significant in affecting commercial property values. Second, variables were selected on the basis of availability of observations. Some variables found significant in other studies were not included in the regressions because of missing observations in the database and the resulting reduction in sample size. The regression for equation (2) had a usable sample of 452 properties, while equation (1) included 1,379 observations. The decline in sample size from equation (1) to (2) is due to the number of missing observations in the database.

In the empirical estimation the dependent variable, *SPSF*, is the actual sales price of properties per square foot. *CAP* is net operating income divided by the value of each property. Wheaton [18] and Fehrebach, Rutherford and Eakin [4] found that cost of capital and capitalization rate were significant determinants of industrial property values. It was expected that the capitalization rate would also influence the values of multifamily, retail, office and other properties. The expected sign was negative; higher returns desired by investors would result in lower property prices, all other things constant.

OCC is the percentage of the leased area of the property currently occupied or the percentage that is leased before construction is complete. Rosen [12] suggested in a theoretical article that vacancy rate and property values should be related. Sirmans, Sirmans and Benjamin [17] and Sirmans and Guidry [16] found that vacancy rate (or vacant space in Sirmans and Guidry [16]) was a significant determinant of commercial property values. There should be a positive relationship between the occupancy rate and the sales price of a property. Higher occupancy rate, other things equal, should generate higher rental income and, therefore, higher profitability. Consequently, investors should be willing to pay higher prices for such properties.

INCGR is the increase in property gross income expressed as a percent. Sirmans and Guidry [16] found that growth potential and income potential of a property location are determinants of shopping center rents. Sirmans and Benjamin [15] suggested that population growth would affect rents of multifamily properties. Saderion, Smith and Smith [14] and Bernes and Mitchell [2] found income to be a factor in property values. Properties with larger percentage growth in gross income, like those with higher dollar incomes, should have higher sales prices. Growth in income should, all other things equal, yield higher net operating income, cash flow and profitability, thereby enhancing the price of a property.

SIZE is the total square footage of the building. Glascock, Jahanian and Sirmans [5], Rosen [12], Guntermann and Norrbin [6], Sirmans, Sirmans and Benjamin [17], Fehribach, Rutherford and Eakin [4], and Sirmans and Guidry [16] all found building size to be a significant factor affecting property values. Building size is one of the most common factors found in prior research that determines the values of all types of commercial properties. Generally, the larger the area of a building, the greater its sales price per square foot will be. Larger buildings should, other things being equal, generate more income and cash flow resulting in higher prices.

EXPGR is the annual growth rate in operating expenses expressed as a percent. Given the findings of Sirmans and Guidy [16], Saderion, Smith and Smith [14], and Bernes and Mitchell [2] in regard to income growth, expense growth can also be expected to influence property prices. *Ceteris paribus,* rising operating expenses should decrease net operating income, thereby reducing return on investment. It is expected that there would be a negative relation between *EXPGR* and property prices.

Finally, dummy variables for property type were included in the second regression. The data set divided properties into multifamily, office, retail, industrial, land, mixed use, hotel/motel and resort categories. There were several further classifications of retail, commercial and industrial properties. Properties used in the regression for equation (2) were grouped into four types: multifamily, retail, office and industrial properties. The properties in the remaining categories (land, hotels and resorts) were deleted because of missing values. *RETAIL*, *OFF* and *IND* are dummy variables for retail, office and industrial properties respectively, taking on values of 1 if a property fell into that category and zero otherwise. The multifamily property type was specified as the base case for the regression. The purpose of the property dummy variables was to ascertain if there were significant differences in prices due to property type.

RESULTS

Tables 1 through 4 contain the results of the empirical analysis. Table 1 shows the descriptive statistics for the variables used in both regressions. The average selling price (based on a sample of 452 properties) is $59 per square foot with a standard deviation of almost $63 per square foot. The average capitalization rate is 6.6% with a standard deviation of 5%. The average occupancy rate is 53% with a standard deviation of 46%, and the annual growth rate in gross income is 4.5% with a standard deviation of 3%. Overall, the standard deviations for many of the variables are large indicating a substantial variation in values for the sample.

TABLE 1
Summary Statistics for Variables

Variable Name	Mean	Standard Deviation
SPSF	59.366	62.629
BUYER	0.106	0.308
CAP	6.558	5.059
EXPGR	4.009	1.427
RETAIL	0.155	0.362
OFF	0.188	0.391
IND	0.168	0.374
OCC	52.736	45.614
INCGR	4.531	3.030
SELLER	0.020	0.140
SIZE	79,217.115	174,943.354

Source: Derived from *Investment Real Estate Financing 1990-1992*, National Association of Realtors

Table 2 contains the Pearson correlation coefficients for the variables used in the regressions. For the independent variables the correlations are generally below 0.50, ranging from -0.216 to 0.901. *OCC* and *CAP* had the highest correlation of 0.901. Tests were performed for multicollinearity, and no evidence of a problem was found. There is a small positive correlation between price per square foot and the foreign buyer dummy variable (*BUYER*), indicating that foreign investor purchases are associated with higher prices. There is a slightly negative correlation between *BUYER* and *CAP*, indicating foreign investors are associated with properties that have lower capitalization rates.

Table 3 contains the results of the regression applying equation (1). The constant is significant at the 1% level, *BUYER* is significant at the 1% level, and the coefficients are positive as expected. The coefficient for *SELLER* is negative as expected, but not significant. The F-value is significant at the 5%; however, variables only explain 0.4% of the variation in the sales prices. The Durbin-Watson statistic was indeterminant. Given the results of this regression, clearly there are more factors that determine property prices as expected. However, the results do show that the foreign investor dummy variable is a statistically significant variable influencing property prices and that prices that are about 16% higher than those purchased in the absence of other factors and foreign investors. The sales price of properties generally, given the results in Table 3, is $54 per square foot on average and about $62 per square foot with the presence of foreign investors in property markets.

TABLE 2
Correlation Coefficients

	SELLER	*RETAIL*	*OFF*	*IND*		*CAP*	*EXPGR*		*OCC*	*SPSF*
BUYER	0.002	0.031	-0.019	0.018	-0.012	-0.037	0.054	0.073	-0.035	0.111
SELLER		0.027	-0.028	-0.022	0.013	0.050	-0.029	-0.009	0.069	-0.047
RETAIL			-0.206	-0.193	0.022	0.031	0.006	-0.047	0.018	0.172
OFF				-0.216	-0.025	-0.040	-0.001	0.006	-0.053	0.174
IND					0.114	0.045	-0.093	0.023	0.006	-0.150
SIZE						0.045	0.067	0.024	0.066	0.135
CAP							-0.090	-0.019	0.901	-0.223
EXPGR								0.169	-0.092	0.155
INCGR									-0.025	0.012
OCC										-0.126

Source: Derived from *Investment Real Estate Financing 1990-1992*, National Association of Realtors

TABLE 3
Regression Results
Buyer and Seller Origin Only

Variable	Coefficient	T-statistic	Probability
CONSTANT	53.552	29.787**	0.0001
BUYER	15.954	2.645**	0.0083
SELLER	-2.647	-0.245	0.8068
Durbin-Watson	= 1.707		
R^2	= 0.005		
Adjusted R^2	= 0.004		
n	= 1379		
F-Value	= 3.512*		

Source: Derived from *Investment Real Estate Financing 1990-1992*, National Association of Realtors
*Significant at the 0.05 level
**Significant at the 0.01 level
CONSTANT is the intercept

Table 4 contains the results of the full regression with *BUYER*, *SELLER* and the control variables. The R^2 increased to 19%, and the F-value is significant at the .01 level. The variables as a group are significant in explaining the variation in sales price per square foot. The Durbin- Watson statistic is indeterminant, and other tests for autocorrelation did not reveal problems. Most of the variables are statistically significant, with *SELLER* (which has a negative coefficient), *IND* and *INCGR* not being significant. *BUYER* is positive and significant at the 0.05 level. The sign of *CAP* is negative as expected, with *SIZE* and *OCC* positive as expected. With foreign investors participating as buyers in real estate markets, property prices were about 20% higher (or $48 per square foot) than otherwise. A one percent increase in the capitalization rate reduced prices by almost 7%. Properties with greater square footage would command higher prices; however, given the coefficient of *SIZE*, the impact on property prices is marginal. Higher occupancy level will add 0.6% to the price for each one percent increase in the occupancy rate.

TABLE 4

With Seller Origin, Buyer Origin and Control Variables

Variable		T-statistic	Probability
CONSTANT	40.032	4.043**	0.0001
BUYER	19.981	2.308*	0.0215
SELLER	-20.688	-1.085	0.2785
CAP	-7.204	-5.913**	0.0001
EXPGR	5.320	2.777**	0.0057
RETAIL	36.396	4.681**	0.0001
OFF	33.503	4.637**	0.0001
IND	-7.933	-1.036	0.3008
OCC	0.570	4.206**	0.0001
INCGR	-0.200	-0.224	0.8225
SIZE	0.005	3.110**	0.0020

Durbin-Watson = 2.002
R^2 = 0.207
Adjusted R^2 = 0.189
n = 452
F-Value = 11.512**

Source: Derived from *Investment Real Estate Financing 1990-1992*, National Association of Realtors
*Significant at the 0.05 level
**Significant at the 0.01 level
CONSTANT is the intercept

The results presented in Table 4 yield two additional observations. First, not only are *OFF* and *RETAIL* positive and significant at the 1% level, but those types of properties command significantly higher prices compared to multifamily real estate, about 35% higher overall. For retail real estate, this translates to a $14 per square foot premium. For office property, prices would be $13.40 higher than that paid by buyers of multifamily properties. Second, expense growth has a positive influence, contrary to the expected sign. The result, indicating higher prices with a higher expense growth rate, is difficult to explain and may be due to the nature of the data.

CONCLUSION

This study examined the impact of foreign investor purchases and sales of commercial properties in the United States. Using times series data for 1990 through 1992 from the National Association of Realtors, two regressions were estimated. The first included two dummy variables for the origins of buyers and sellers of commercial properties, and the second regression included the two foreign investor dummy variables plus control variables for capitalization rate, expense growth rate, property occupancy rate, annual growth in gross income, building size and type of property.

In the regression using the foreign investor dummy variables only, it was found that the effect of foreign investors purchasing commercial properties was significant and a positive determinant of values. Foreign investors selling properties produced a negative effect on sales prices, but it was statistically insignificant.

In the regression with control variables, the variable for the purchase of property by foreign investors is positive and significant, supporting the hypothesis and expectation that the presence of foreign investors would increase demand sufficiently to raise property prices. The empirical results imply that prices were about 20% higher with foreign buyers in commercial markets than otherwise. Also, property capitalization rate, growth in expenses, occupancy rate, building size and two property types (retail and office) are significant. Capitalization rate is

negatively related to property prices. Retail properties, office properties, occupancy rate, expense growth rate and building size have positive impacts on property values. Retail and office property prices were found to be about 35% higher relative to multifamily properties. Building size, though significant, had an extremely small coefficient and impact on prices.

For the period 1990-1992 and consistent with other studies, building size, capitalization rate and occupancy rate influence prices. Retail and office properties command noticeably higher prices relative to apartment complexes. The presence of foreign investors in the U.S. property markets was a statistically significant factor in influencing commercial real estate prices. Consequently, foreign investor purchases of real estate is one additional determinant of property prices. Given the results of the analysis, an investor should not only look at the physical, economic and financial characteristics of properties when contemplating acquiring commercial real estate, but also the presence of foreign investors in that market. The results of this study point the way for further research. Some foreign investors, notably the Japanese, have sold properties during the early 1990s. Empirical analysis of data since 1992 might reveal foreign investor property sales to be an important influence on property prices. Additionally, analysis utilizing a longer time period would reveal any long-run impacts of foreign investor property trading. For the early 1990s, it seems that the presence of foreign investors increased property demand sufficiently to have had a positive effect on commercial property prices as predicted by several researchers.

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