INTERNATIONAL REAL ESTATE REVIEW 1999 Vol. 2 No 1: pp. 21 - 34

# Institutional Factors and Real Estate Returns -A Cross Country Study

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This study provides an empirical study on the relationship between institutional factors and real estate returns. Using data from both developed and emerging market countries, our empirical results show that institutional factors do influence real estate returns and these factors may not be fully priced. We find that when controlling return volatility and level of economic growth, a higher property return is expected in countries where the economy is more efficient and has more economic freedom. Our results support the view that the combination of "lumpiness" of real estate investment and the volatile nature of international capital flows may expose property investors to extra investment risk, which needs to be compensated. Our results also indicate that an improvement in a country's economic efficiency and economic freedom may reduce property variance risk thus enhancing property returns.

### Keywords

Economic Freedom index, Institutional Investors' Country Credit Ratings.

### Introduction

The importance of institutional factors in economic activities has been extensively discussed. There is a growing literature on the economics of law. Researchers are examining how laws influence the economic environment. At present, most of the existing literature of law and economics focus on the relationship between the legal systems and economic efficiency. They include, the interdependency between legal system (or political system) and the economic system<sup>1</sup>; the relationship between laws and social welfare<sup>2</sup>; and the impact of government intervention on economic development<sup>3</sup>. Most studies argue that a well-established institutional framework is essential for both economic efficiency and development. Among the literature, two studies are worth noting. Jaffe and Louziotis (1996) conducted a detailed survey on the issue of property right and economic efficiency. They also linked their discussion with real estate investment. Scully (1988) showed empirical evidence on the relationship between the institutional framework and economic development. These studies provide some guides on the methodology for empirically examining the relationship between institutional framework and other economic activities.

Because of the immobility of real property and of the complexity of real estate transactions, a real estate investor needs more legal protection on the property rights. It makes sense to hypothesize that institutional factors may exert more influence on real estate markets than other markets (Jaffe and Louziotis (1996)). Despite the huge potential impact of institutional factors on real estate markets, there has been little empirical study on the effects of these factors on real estate returns and volatility<sup>4</sup>. Only Geurts and Jaffe (1996) provide some preliminary empirical investigation on this issue. However,

<sup>&</sup>lt;sup>1</sup> To sum up, literature in this area shows that legal system has crucial influence on the economic system or economic performance. See such as Streit (1992), Grossekettler (1996), Meijer (1996), Roe (1994) and Allen (1995).

<sup>&</sup>lt;sup>2</sup> Overall, this literature emphasizes the crucial role of contract laws and property right structure in a market operation. See Jaffe and Louziots (1996), Coleman (1992), Geistfeld (1994), Trebilcock (1993), and Ayres (1995).

<sup>&</sup>lt;sup>3</sup> These studies emphasize the role of government whose policies or legislative efforts will influences the development of an economic system. See Lipton (1995) and Clague, keefer, Knack, and Olson (1996).

<sup>&</sup>lt;sup>4</sup> Previous studies, such as Bittlingmayer (1992) and La Pona, Lopez-de-Silanes, Shleifer and Vishny (1996), did examine the relationship between capital structure and law. In a recent study by Wei (1997), he examined the impact of corruption on foreign direct investment (FDI). Liao and Mei (1997) also examined the impact of law on security risk and returns. But they did not study the impact of law on real estate risk and returns.

they only examine the institutional characteristics for the potential of international diversification. While they do not address the risk/return relationship empirically and only discuss correlation among various risk measures, their discussion on the possible risk variables involved in international real estate investment has provided some background for the current study.

Though there are theoretical reasons to believe that institutional factors should impact the real estate market, it is not clear how important these factors play in an asset pricing framework<sup>5.</sup> For example, it is not clear that poor legal protection would necessarily lead to poor returns, since poor legal protection (or poor regulations) may deter foreign competition (or foreign investors) thus giving established local firms a strategic advantage. It is also not obvious that high economic freedom would necessarily lead to good returns, since the unstable characteristic of international capital flows may increase the risk exposure of local market investors. One can also argue that although high economic efficiency can reduce transaction costs, it may accelerate asset turnover and increase volatility.

In this study, we employ a simple regression model to investigate the potential market impact of institutional factors. We introduce an economic freedom index, which can be used to gauge the level of economic freedom in different countries around the world. We also use an economic efficiency index to measure the efficiency of an economy. We will examine how the institutional factors affect the asset returns of real property as well as various measures of risks. We will also examine whether economic variables, such as GDP growth and country risk rating, impact property returns and risks.

The organization of the study is as follows. Section 2 describes the data. Section 3 provides an ex post cross-sectional return generating model, which is designed to capture the impact of institutional factors on asset returns. Section 4 employs the regression model to examine the direct impact of institutional factors on property security returns together with other economic factors, such as economic growth and country risk ratings. Finally, Section 5 concludes.

## The Data

The data we employ in studying the linkage between institutional factors and property stock returns are described as follows:

<sup>&</sup>lt;sup>5</sup> Here, the asset pricing framework refers to the fact that various legal and economic variables are used in explaining the ex post return of real estate assets. We are not implying a formal asset pricing model, such as CAPM or APT, is used.

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- Property stock returns data derived from the total quarterly return index constructed by Datastream. The data covers 24 countries which trade property stocks in local securities markets. The return index for each country ends at the third quarter of 1997. However, according to the data availability, the beginning dates of the indices are not the same among countries. The countries included and the beginning date of the indices are stated as follows. The countries of which data begins at the first quarter of 1986 are: Australia, Belgium, Canada, France, Hong Kong, Ireland, Italy, Japan, Malaysia, Netherlands, Norway, Singapore, Sweden, UK, and US. The beginning date for the others are Austria (1992 1st Q), Indonesia (1992 3rd Q), Denmark (1994 3rd Q), New Zealand (1988 1st Q), Peru (1994 1st Q), Philippines (1990 2nd Q), Portugal and Thailand (1990 1st Q), and Spain (1987 1st Q). In order to avoid a selection bias, we have included data from both developed and developing markets.
- 2. The Rule of Law index, the Economic efficiency index, the Corruption index, the Risk of expropriation index, and the Coercion of contract index are derived from the study of La Pona, Lopez-de-Silanes, Shleifer and Vishny (1996). The index originated from the "International Country Risk Guide". The higher score the more favourable the situation. This index is an average of the monthly index between 1982 to 1995.
- 3. The Economic freedom index, derived from Homes, Johnson and Kirkpatrick's joint study (1997) on economic freedom around the world. The index is designed to provide an empirical measure of the level of economic freedom in countries of the world. The index is a weighted average of ten sub-indices covering trade policy, taxation policy, government intervention in the economy, monetary policy, capital flows and foreign investment, banking policy, wage and price control, property rights, regulation, and black market activities. The 1995 data was used for this study. We have re-scaled the data so that the variable increases with the level of economic freedom.
- 4. Mean annual GDP Growth from 1986-1995, derived from the World Bank and IMF.
- 5. Institutional Investors Country Credit Rating (IICCR) published by the Institutional Investor. IICCR is used to measured an individual country's credit risk.

In order to do cross-country analysis, all of the return series are converted into U.S. dollar returns. As a result, the study could be viewed from a US investor's perspective. It has the advantage of not having to deal with individual country returns with different currencies, which are usually influenced by different inflation rates in various countries. The formula used to transform returns on foreign assets into dollar terms is as follows:

$$\$R_t = (\frac{X_{t-1}}{X_t})[1+R_t] - 1 \tag{1}$$

where  $X_t$  is the spot exchange rate (stated as units of foreign currency per dollar) at the month t.  $R_t$  denotes the local currency return and  $R_t$  indicates the dollar return.

### Methodology

We construct two *ex post* cross-sectional regression models, which allows us to examine the relationship between various country specific variables and both market returns and total risk (return volatility). According to Bekaert, Erb, Harvey, and Viskanta (1997), due to market segmentation, overall market volatility is generally more significant in explaining country expected returns rather than systematic risks, we construct the following multiple regress model:

$$\$R_i = a + b\mathbf{s}_i + \mathbf{g}Y_i + \mathbf{e}_i \tag{2}$$

where  $\Re_i$  is mean dollar quarterly returns of property stock on country *i* during the sample period and  $\sigma_i$  is the standard deviation of asset returns, representing the total risk of the returns of property stock.  $Y_i$  is a vector of country specific variables such as the Freedom Index, Economic efficiency index, and Institutional Country Risk Rating (IICCR). In this regression model, we can examine the impact of institutional variables by controlling the traditional risk measure  $\sigma_i$ .

In order to investigate the relationship between the traditional total risk measure ( $\sigma_i$ ) and the institutional variables, we have also run the following regression:

$$\boldsymbol{s}_i = c + d\boldsymbol{Y}_i + \boldsymbol{e}_i \tag{3}$$

### **Empirical Results**

Table 1 presents the summary statistics of the data. We can see a fairly wide variation of mean returns across countries with the average being 12.1% during the sample period. Hong Kong had the highest mean dollar return of 33.17% per annum while New Zealand lost an average of 11.7% per year during the same time period. The Economic freedom index has a mean value of -2.23, with Hong Kong being the most free with an index level of -1.25 and Peru the most repressive with an index level of -2.90. There is also a wide variation of GDP growth across different countries. Regarding the economic efficiency, a large variation across countries is also found. Several Asian and western countries such as Singapore, Japan, Hong Kong, U.S., Sweden, and U.K. have the highest economic efficiency (10), while Peru has the least efficiency (2.5). We can also see a large variation in the degree of Rule of Law across different countries, with several western countries such as Australia and the U.S. having the most rigorous rule of law (10), while Peru having the least respect for rule of law (2.5). Table 1 also shows a wide variation of several risk measures across different countries, such as the Corruption index, the Risk of expropriation index, the Coercion of contract index, the credit rating (IICCR), and individual market volatility.

Table 1 also presents the correlation matrix among the variables. We can see a few interesting numbers. First of all, the group of variables, including the Rule of law index, the Corruption index, the Risk of expropriation index, the Coercion of contract index, and the credit rating (IICCR) are strongly and positively correlated to each other within a country. The correlation coefficients among the group of variables are almost all above 0.8 and a large part of them are even greater than 0.9. This is expected because respect for the rule of law naturally leads to less corruption, less risk of government expropriation and strong coercion of contract. It is also anticipated that a better situation in former variables causes a better rating in the Institutional Investors Country Credit Rating (IICCR). From an investment risk perspective, since the group of variables have high positive relationship with IICCR (0.874, 0.780, 0.928, and 0.915 respectively), this indicates that a country can improve its credit ratings by making improvements in these three variables, and therefore can help reduce its international borrowing cost. In addition, it is worth noting that economic efficiency has a fairly high correlation with the above group of variables. It suggests that a wellestablished legal system may be an important foundation for economic efficiency. From Table 1, a fairly high correlation is also found between economic freedom and the above risk related variables. This is interesting because it suggests that instead of being an impediment to economic freedom, respect for the rule of law may actually be an important condition for economic freedom.

The high correlation among risk related variables (the Rule of law, the corruption index, the Risk of expropriation index, the Coercion of contract index, and the credit rating (IICCR)) shown in Table 1 may cause a

	Prprty Return	Volati.	Freed Index	GDP Growth	Effici.	Rule of Law	Corr.	Risk of Expro.	COFI	HCCR
Mean	0.121	0.187	-2.23	3.27%	8.32	8.26	7.91	8.93	8.54	73.6
Stan. Dev.	0.111	0.122	0.432	2.13%	2.33	2.29	2.21	1.34	1.43	15.4
Max.	0.337	0.617	-1.25	9.07%	10.00	10.00	10.00	9.98	9.69	91.9
Min.	-11.7	0.059	-2.90	0.37%	2.50	2.50	2.15	5.22	4.68	30.0
Correl.										
Volatility	0.384									
Freedom Index	0.287	-0.313								
GDP Growth	0.408	0.483	0.229							
Effi	0.098	-0.658	0.652	-0.342						
Rule of Law	0.046	-0.363	0.557	-0.224	0.736					
Corr.	0.020	-0.465	0.580	-0.319	0.874	0.906				
Risk of Expro.	0.039	-0.394	0.489	-0.192	0.666	0.941	0.848			
COFI	0.081	-0.339	0.566	-0.135	0.692	0.951	0.864	0.958		
IICCR	0.049	-0.373	0.531	-0.059	0.647	0.874	0.780	0.928	0.915	

**Table 1: Summary Statistics** 

Note: Mean annual property stock returns are derived from the quarterly total return index of property stocks by Datastream, the The data covers 24 countries. The index for each country ends at the third quarter of 1997. However, according to the data availability, the beginning date of the index are not the same among countries. The countries included and the beginning date of the indices are as followed. The data begins at the first quarter, 1986 are: Australia, Belgium, Canada, France, Hong Kong, Ireland, Italy, Japan, Malaysia, Netherlands, Norway, Singapore, Sweden, UK, and US. The Others are Austria (1992 f Q), Indonesia (1992 3 Q), Denmark (1994 3rd Q), New Zealand (1988 fd Q), Peru (1994 fd Q), Philippines (1990 2rd Q), Portugal and Thailand (1990 1st Q), and Spain (1987 1st Q). The Rule of Law index, economic efficiency index, corruption index, risk of expropriation index, and coercion of contract index are derived from the study of La Pona, Lopez-de-Silanes, Shleifer and Vishny (1996). The indices originated from International Country Risk Guide. This index is an average of the monthly index between 1982 to 1995. The Economic Freedom index is derived from Homes, Johnson and Kirkpatrick's joint study (1997) on economic freedom around the world. The index is designed to provide an empirical measure of the level of economic freedom in countries of the world. The index is a weighted average of ten sub-indices covering trade policy, taxation policy, government intervention in the economy, monetary policy, capital flows and foreign investment, banking policy, wage and price control, property rights, regulation, and black market activities. The 1995 data was used for this study. We have re-scaled the data so that the variable increases with the level of economic freedom. Mean annual GDP Growth from 1986-1995, derived from the World Bank and IMF. Institutional Investors Country Credit Rating (IICCR) is taken from the Institutional Investor, March 1996.

multicollinearity problem in a multiple regression analysis. To reduce the problem we only retain the credit rating variable in the following regression analysis without the loss of much information6. The other four variables are dropped from the dependent variable set. The reason to retain the credit rating variable is that IICCR is a well known and widely used risk measure by international investors.

Table 2 presents the results of the return regression as shown in equation (2), and assumes the right hand variables as being exogenous. We ran five regressions. In the first regression, we only put return volatility as explaining variable. In order to examine the impact of individual institutional variables, in the other four regressions, we put one institutional variable in each regression as well as the return volatility.

From Table 2, except for the first regression, the small values of variance inflation factors (VIF) of all the explaining variables indicate that there is little multicollinearity problem. We can see that controlling return volatility, both the economic freedom variable and the economic efficiency variable have a significant and positive impact on the property stock returns. It means that with the same level of total risk, a higher property stock return is expected in a more efficient economy or in a country with a higher level of economic freedom. The results are interesting and worth further discussion. In the property market, making or adjusting an investment decision can take a much longer time than other financial assets. In a more efficient economic environment, the time allowed to react to new information is much shorter. However, for property investors, it is very hard to adjust their investment decisions within a short time period. This inertial characteristic (lumpiness or illiquidity) of real estate investment decisions make the property investors more likely to be exposed to the risk of wrong investment decisions. On the other hand, in a less efficient environment, the property investors may be allowed a longer time to react to new information. Therefore, the property investors require a higher return to compensate the additional risk exposure.

In an economy with higher degree of economic freedom, international capital flow is much easier to get in and out. Therefore, the local property market is more likely to be influenced by the uncertainty of capital flow.

 $<sup>^{6}</sup>$  We conduct a principal component analysis of these five variables. The results show that the first component includes all the five variables with similar loadings (-0.455, -0.428, -0.456, -0.457, -0.438) and accounts for 92% of the variance of their correlation matrix). In addition, only the eigenvalue of the first component (4.589) is greater than 1 and is much greater than that of the second component (0.243). It should lose little information to retain only one of the five variables in the following analysis.

Regression	Constant	Volatility	Institutional Variables	Name of Institutional Var.	R <sup>2</sup> (%) (adjusted)
(1)	0.014 (1.39)	$0.087 \ (1.95)^{**}$			10.9
(2)	$0.073 \\ (2.79)^{**}$	$0.120 \ (2.80)^{**}$	$0.029 \\ (2.40)^{**}$	Freedom Index	26.8
VIF <sup>†</sup>		1.1	1.1		
(3)	-0.065 (-2.11) <sup>**</sup>	$0.180 \ (3.42)^{**}$	$0.007 \\ (2.68)^{**}$	Eco. Efficiency	14.2
VIF		1.8	1.8		
(4)	-0.019 (-0.59)	$0.106 \\ (2.21)^{**}$	0.001 (1.05)	IICCR	11.3
VIF		1.2	1.2		
(5)	0.007 (0.07)	0.056 (1.10)	0.004 (1.31)	GDP Growth	13.7
VIF		1.3	1.3		
Overall Stocks	0.164 (2.73) <sup>**</sup>	0.892 (1.44)	0.039 (1.36)	Freedom Index	3.1

Table 2: Regression of Property Returns on Institutional Variable, controlling volatility.

Note:

**†**: VIF indicates variance inflation factor; number in parenthesis represents t statistics;

\*: indicates a 10% significant level;

\*\*: indicates a 5% significant level.

The recent Asia financial crisis is a case in point. Hong Kong real estate price dropped about 50% during the crisis while the Chinese real estate market was less affected. In addition, due to the inertial characteristics of real estate investment decisions, property investors find it much difficult to move in and out of a to alter their portfolio quickly. In comparison to other financial assets, property investors are exposed to extra liquidity risk. To confirm the deduction, we regress the security market returns on its volatility and the freedom index (see last row of Table 2). The result shows that the economic freedom does significantly influence the expected return.7 It is a little surprising that credit rating and GDP growth has no significant explanatory power. This may suggest that these developments are largely expected by

<sup>&</sup>lt;sup>7</sup> Another explanation is that higher level of economic efficiency probably contributed to high ex post real estate returns through other profit factors other than GDP growth.

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investors and priced into property stocks so that they have no impact on future returns.

In order to separate the influence of stage of economic growth, we also ran the regression by controlling both the return volatility and GDP growth. The results are exhibited in Table 3. The results are similar to Table 2. The level of economic freedom and economic efficiency are still positively and significantly influenced property returns. It indicates that the above two risks are also priced under the same stage of economic growth. In sum, from Table 2 and 3, we can conclude that, while the "lumpiness" of real estate investment and the volatile nature of international capital flows may expose property investors to extra investment risk (which needs to be compensated). It also confirms that institutional factors do influence real estate returns and the risks are reflected in their prices.

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Regression	Constant	Volatility	GDP Growth	Institutional Variables	Name of Institutional Var.	R <sup>2</sup> (%) (adjusted)
(1)	$0.066 \\ (2.06)^{**}$	$0.108 \ (1.98)^{**}$	0.001 (0.36)	$0.027 \\ (1.93)^{**}$	Freedom Index	23.6
VIF <sup>†</sup>		1.7	1.6	1.4		
(2)	-0.020 (-0.60)	0.075 (1.35)	0.003 (1.16)	0.001 (0.88)	IICCR	12.7
VIF		1.5	1.3	1.2		
(3)	-0.738 (-2.45) <sup>**</sup>	$0.148 \\ (2.72)^{**}$	0.004 (1.62)	$0.008 \\ (2.83)^{**}$	Eco. Efficiency	35.4
VIF		2.0	1.3	1.8		

Table 3: Regression of Property Returns on Each Institutional Van	riable,
controlling volatility and GDP growth.	

Note: **†**: VIF indicates variance inflation factor; number in parenthesis represents t statistics;

\*: indicates a 10% significant level; \*\*: indicates a 5% significant level.

Table 4 presents the results of the relationship between the institutional variables and return volatility controlling GDP growth. From Table 4, firstly we can see that GDP positively influences property stock return volatility. This is to be expected. Most countries with high economic growth are developing countries. Their capital markets are known to be more volatile. On the other hand, most western countries have more mature economies and

do not have fluctuating economic growth. Their capital markets are less volatile.

Second, from Table 4, we find that all three institutional variables have negative and significant impact on property return volatility. Since crediting rating agencies usually award better rating to economies with lower return volatility, it is not surprising that the crediting variable has a negative impact on property stock return volatility. But it is a little surprising that the impact of economic freedom and efficiency variables are negative. Considering the results of the return and the volatility regressions together, we find that these two institutional variables play two different roles in property stock pricing. This implies that an improvement in these two institutional dimensions on one hand reduces property variance risk, while on the other hand it may enhance ex post real estate returns8.

Regression	Constant	GDP growth	Institutional Variables	Name of Institutional Var.	R <sup>2</sup> (%) (adjusted)
(1)	$0.096 \\ (2.31)^{**}$	$0.028 \\ (2.58)^{**}$			19.8
(2)	-0.206 (-1.70)	0.034 (3.43) <sup>**</sup>	-0.127 (-2.63) <sup>**</sup>	Freedom Index	36.8
(3)	0.303 (2.70)**	0.027 (2.63) <sup>**</sup>	-0.003 (-1.96) <sup>**</sup>	IICCR	29.0
(4)	$0.376 \\ (4.25)^{**}$	$0.017 \\ (1.79)^*$	-0.029 (-3.43) <sup>**</sup>	Eco. Efficiency	14.1

 
 Table 4: The Statistical Determinants of Property Return Volatility, controlling GDP growth

Note: number in parenthesis represents t statistics;

\*: indicates a 10% significant level; \*\*: indicates a 5% significant level.

### Conclusion

This paper provides an empirical study on the relationship between institutional factors and real estate returns. We use data from both

<sup>&</sup>lt;sup>8</sup> It is also true for market return volatility. We also regress the same model using market return volatility as independent variable. The t values for coefficients of economic freedom, IICCR, and economic efficiency are -2.86, -4.84 and -3.52. The adjusted R-squares for each regression are 27.3%, 52.2%, and 36.5%. This also confirm the findings of Erb, Harvey and Viskanta (1996) that volatility are negatively related a country's risk ratings.

developed and emerging market countries. Our empirical results show that institutional factors do influence real estate returns and these factors are probably not fully priced. We find that when controlling return volatility and level of economic growth, a higher property return is expected in countries where the economy is more efficient and has more economic freedom. Our results support the view that the combination of "lumpiness" of real estate investment and the volatile nature of international capital flows may expose property investors to extra investment risk, which needs to be compensated. Our results also indicate that an improvement in a country's economic efficiency and economic freedom may reduce property variance risk thus enhancing property returns.

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