Hurdle Rates for International Real Estate Investing

An analysis of the many factors that affect risk for the international opportunistic real estate investor.

KENNETH T. ROSEN
DANIEL T. VAN DYKE

TO DETERMINE THE appropriate hurdle rate of return for an international opportunistic real estate investor, it is necessary to think in terms of a global asset allocation model. In the purely U.S. context, investors evaluate the appropriate hurdle rate in terms of spreads over "riskless" U.S. Treasury securities. In the international context, the global investor looks at U.S. Treasury securities somewhat differently. The U.S. Treasury security, while riskless in a default sense, takes on risk in terms of relative currency rate movements. These currency rate movements are, in turn, driven by inflation expectations and current account balances, interest rate differentials (actual and expected), potential

Table I: Long Bond Yield, Selected Countries, 1999

Country	Spread (bp)
Japan	-457
Singapore	-206
Germany	-90
Spain	-68
Canada	-29
Greece	4
Thailand	26
Hong Kong	130
Mexico	262
Indonesia	477
Poland	649
Brazil	885

political instability, government fiscal and monetary policies, and, ultimately, investor capital flows.

In this global context, risk is defined not only in terms of "default risk," but also in terms of market volatility of returns, and the cross-correlation of returns between countries. As a result, global bond investors often accept a lower current return than available in U.S. Treasury securities because of the lower "global risk," which includes default risk, currency risk, and "cross-correlation portfolio risk reduction."

Extending this global investor perspective to the real estate arena involves the addition of real estate specific risk considerations. In this context, security of property rights and contracts, the stringency of land-use controls, the length of the standard office lease, and the cyclical volatility of the office market must all be considered. The global economic risk and return expectations are revealed through investor capital flows. Global office capitalization rates indicate the appropriate current return that investors will receive on the real estate investment.

Table II: Office Capitalization Rates, Selected Countries, 1999

Country	Cap Rate	Spread to U.S.
Singapore	4.3%	-4.0%
Switzerland	5.0%	-3.3%
Spain	5.3%	-3.0%
Taiwan	5.8%	-2.5%
Finland	6.3%	-2.0%
U.K.	6.8%	-1.5%
France	7.4%	-0.9%
Norway	7.8%	-0.5%
Canada	8.7%	0.4%
Indonesia	10.0%	1.7%
Hungary	10.5%	2.2%
Philippines	11.5%	3.2%
Russia	21.0%	12.7%

It is apparent that cap rates are notably lower in a number of European and Asian markets than in the United States. This cap rate configuration implies that investors perceive a lower economic and real estate market risk in many markets as compared with the United States. These lower cap rates may be in part the result of economic risk factors such as the large U.S. trade deficit and the potential for weakness in the dol-

lar. In addition, global cap rate patterns may be the result of supply-side variables and the perceived greater risk of a potential oversupply in U.S. real estate markets. In the past, oversupply has led to volatile and, on average, lower total returns in U.S. markets.

This paper quantifies global risk factors and calculates hurdle rates across countries with those risk factors. This analysis builds on the work of Jones Lang LaSalle (JLL; "Investment Strategy Annual 2000") and Prudential Securities (PS; Y. Liang and W. McIntosh, "Country Risk Premiums for International Investing," January 2000). The former takes a categorization approach, whereby various risk premia are assigned to political, economic, real estate market, legal, and currency risk for various countries. Then, by building up the risk premia from these components, JLL computes total hurdle rates or return for various countries. In the PS approach, the risk premia across countries are estimated from market data. Specifically, the equity market return is used together with the country credit score to calculate the link between country risk and expected return. A total rate of return is then calculated by exploiting the link between country risk and stock market returns.

Our approach evaluates an array of variables that may affect hurdle rates of return on real estate, and we estimate a two-equation model that attempts to explain both economic and real estate market risk using a subset of these variables. Using this rich simulation approach, we approximate total hurdle rates of return, assuming that variations in the hurdle return due to appreciation are proportional to the variations due to income.

VARIABLES

To quantify the real estate market risk—and hence hurdle rates—in various international markets, we consider variables that impact both economic and real estate market risks: economic, political/legal, financial, the real estate market. In the demographic area, variables include population, population growth, and degree and rate of urbanization. In the economic area, variables include shares of employment in agriculture, manufacturing, and services, as well as government spending, GDP growth, inflation, trade surplus, foreign currency reserves, current account index, change in current account index, volatility of exchange rates, and the location in the economic cycle. Political/legal variables include political stability and effectiveness, trade policy, and security of property rights and contracts. In the financial area, we look at sovereign debt credit rating, existence of a corporate debt market, existence of a CMBS market, interest rates, and spreads to U.S. Treasury yields. Finally, real

estate market variables include length of the standard office lease, land-use constraints, and the current location in the real estate cycle.

Better data is available for the economic and financial variables, primarily from international organizations such as the IMF and the World Bank. For the political variables we rely on information published by the Economist Intelligence Unit (EIU) and the Fraser Institute. Several factors determine each of the qualitative indices produced by the EIU and the Fraser Institute. For example, the EIU's measure of political stability accounts for factors such as whether the country is at war, whether it is subject to social unrest, whether the transfer of political power is orderly, whether the country is engaged in international disputes, the degree of corruption, and the degree of crime. The EIU measure of political effectiveness accounts for whether there has been a change in government, the extent to which the country is pro-business, institutional effectiveness, bureaucracy and its effectiveness, and the disclosure/fairness/transparency of government actions.

We also use the EIU's current account index, the measure of factors bearing on the current account. This index accounts for such factors as the extent to which the country relies on a single raw material export, whether it relies on a single export in any category, growth of exports, default history on international obligations, ratio of total external debt to exports, and the interest (on international obligations) coverage ratio (relative to exports). The EIU's trade policy index includes the following factors: whether policy is liberal or protective, the export to GDP ratio, regulatory policy, and the policy toward foreign capital, including ownership and repatriation of capital.

DATA

We gathered 1999 data for 45 countries. We also attempted to secure a history of these variables back far enough to invigorate economic conditions unlike those in 1999. For example, 1991 was a recession year in the United States, and other economies around the globe were also under stress because of the surge in oil prices. Unfortunately, this set of data, including office capitalization rates, were not available for 1991, and going back only one or two years would not provide the requisite variety of economic conditions.

Data before the Asian crisis of 1997 would in fact have provided measures that would underestimate risk for those countries subsequently involved in the crises. Many of the EIU's indexes are not available on a consistent basis for more than a year or two. In earlier years, only more

aggregated indexes are available. In short, while the economic and interest rate data are available for earlier years on a consistent basis, the capitalization rate measure that we use as the dependent variable is not available for more than several years. Because of the lack of a consistent history for both the dependent variable and many of the independent variables, we have of necessity confined the analysis to a cross-section study for 45 countries in 1999. First, we compute a correlation matrix for all the variables. There is a high degree of correlation among many of these variables. For example, GDP per capita and the political effectiveness index have a coefficient of 0.805; the trade policy index and the political effectiveness index have a correlation coefficient of 0.815. Not surprisingly, the political effectiveness index and the political stability index are almost perfectly correlated, with a coefficient of 0.868. Thus, many of the factors essentially measure the same thing.

REAL ESTATE-SPECIFIC RISKS

We take a two-step approach to the problem of trying to quantify cross-country real estate market risks. In the first step, we determine the economic/financial risk in the country based on a set of risk factors. In the second step, this economic/financial risk is used as one factor of real estate market risk, along with other risk factors. This estimated two-equation model is then used to simulate the cross-country risk.

We first estimate an equation of economic/financial risk. Overall economic and financial risk impacts both real estate and product markets in general. For example, factors that create economic/financial risk such as a weak current account and a depreciating currency also flow through to real estate market risk. As a measure of economic/financial risk, we use the long-dated yield on domestic Treasury bonds as a spread to long-dated U.S. Treasury bonds. The variables that may have an impact on economic/financial risk are the following: the proportion of employment in agriculture, manufacturing, services, the current account index, government budget deficit as a percent of GDP, volatility of the currency, GDP per capita, inflation rate and the trade balance, trade policy, political effectiveness, and the sovereign debt credit rating. For example, the political effectiveness in Russia is relatively low, creating a riskier economic/financial environment than in, say, Germany.

There are valid theoretical reasons why each of these variables could influence variations in cross-country real estate market risk. Yet the model is not a structural model in the same sense as a supply and demand model. As a result, we have no *a priori* guidance on which of these variables

should go into the equation, and which have only tangential influence. Consequently, to determine which of these variables "explain" our economic/financial risk metric, we use a stepwise regression technique modified by judgment. The stepwise regression technique adds variables in the order of their statistical importance in explaining the dependent variable, in this case the spread on long-dated Treasury yields.

The first four variables, in order of their significance, are the following: sovereign debt credit rating; political effectiveness; trade policy index; and volatility of the currency. In choosing a final equation to explain the cross-country economic/financial risk, we note that the political effectiveness index is highly collinear with the sovereign debt credit rating. By substituting the fourth most important variable, volatility of exchange rates, for political effectiveness, we improve the statistical significance of the other variables, with very little sacrifice in goodness-of-fit (R-squared). Although the significance of the exchange rate volatility variable is compromised (t-value of 0.21), it is no worse than the significance of the political effectiveness variable. In addition, we know from a univariate regression of the Treasury spread on the currency volatility measure that it is a highly significant predictor of economic/financial risk (t-value of 3.16). Further, the overall regression is no worse with the volatility measure, and the other variables are more significant with it.

As a result, we choose as a final equation for economic/financial risk one that includes as independent variable: the sovereign debt credit rating; the standard deviation of the domestic currency with respect to the dollar; and the trade policy index, which includes as a factor capital controls and constraints on repatriation of capital. These variables affect the Treasury spread with respect to the U.S. Treasury in the following way. The Moody's credit rating consists of 24 ordinal categories from Aaa to B3. We convert the alphanumeric designations to strictly number designation, with 24 being Aaa, and 1 being B3. Moving one-third of the way through this range, that is, from 24 to 16, increases the spread by 160 basis points. Lowering the credit rating from 16 to 8 increases the spread another 160 percentage points, or a total of 320 percentage points. In short, each decrement in credit rating boosts the spread by 20 basis points. The exchange rate volatility (measured by the standard deviation of the dollar exchange rate) affects the spread as follows. For each 10-percentage point increase in exchange rate volatility, the spread increases 8 basis points. The trade policy index is an integer index from 0 to 5, with 5 being the worst and 0 being the best. Each point increase in the trade policy index adds 40 basis points to the spread.

As expected from this discussion, the largest impact on the Treasury yield spread across countries is from the sovereign debt credit rating, which is designed to measure country risk for sovereign borrowing. Given this spread, other smaller independent impacts likewise result from exchange rate volatility and trade policy. We believe that the small impact from these two variables may be because the Moody's credit rating already either explicitly or implicitly accounts for factors like exchange rate volatility. Certainly a more volatile exchange rate produces risk in the repayment of sovereign debt as in the recent Asian crisis. The small impact reflects collinearity. These three variables together explain 60.5 per cent of the variance in the spread. We believe that is a reasonable fit, given the nature of the data and the fact that we are dealing with cross-sectional data. The variables in the economic/financial risk equation not only bear up statistically, but they also have structural plausibility.

INTERNATIONAL OFFICE MARKET RISK

Were total returns data available, we would use those data at this point. However, with a paucity of such data, we turn to the more readily available yields (or capitalization rates). These data capture most of the return to investment in real estate assets, and for this reason, we treat cross-country variation in the cash return, or yield, as approximating the variation in total return.

We again approach the estimation of the office market yield equation using a stepwise regression. The variables that come into the regression in order of statistical significance are: land use constraints index; Treasury spread; GDP per capita; current account index; political stability; and security of property rights and contracts. Equity return is the seventh variable that entered the regression, but its contribution to the goodness-of-fit is virtually nonexistent, and its statistical significance is borderline at best.

The equation used for office includes the land use constraints index and the Treasury spread. We also added, one at a time, GDP per capita and the current account index. The current account index does a better job in terms of both statistical significance and R-squared improvement. To this equation, we added political stability index and security of property rights. The sixth variable, the security of property rights index, caused a larger gain in R-squared. Despite entering with weak statistical significance, we believe that the weak statistical significance is because of the high degree of correlation with the other included variables. Because of its performance in a univariate regression

with office up-rates and because of the gain in goodness-of-fit with the other three variables, we included the security of property rights variable. In addition, it makes plausible structural sense. The final equation explaining office yields across countries includes: land use controls index; Treasury spread measuring economic/financial risk; current account index; and the security of property rights index. This equation explains 71.6 percent of the cross-country variation in office market yields.

THE REAL ESTATE RISK EQUATION

The intercept for the office market yield equation is 11.0 percent. This provides the starting point for calibrating the office market yield. Economic/financial risk, measured by the Treasury spread, is based on the factors developed above, and enters the real estate market risk equation. The office yield rises by 18 basis points for each one percentage point increase in the Treasury spread. Additionally, the supply side of the market is captured by the land use constraint index. That index is an integer index going from 1 through 5, with 5 representing the most stringent constraints. We expect a negative relationship between that index and the yield. In fact, the relationship is estimated to be negative, with each one-point increment in the index resulting in a 70 basis point decline in the yield. The current account index, likewise, is an integer index ranging from 0 to 4, with 0 being the most favorable. As the current account index increases by one, the yield increases by 60 basis points. Finally, the security of property rights index is an integer index ranging from 1 to 10, with 10 representing the most secure property rights. Again, we would expect the relationship between this index and the yield to be negative, and the statistical analysis bears out this expectation. For each one-unit increment in the index, the yield declines by 70 basis points. These variables not only have statistical viability in explaining the office yield across countries; they also have structural plausibility. Instead of building up the hurdle rate for a country, in this example we show the difference in hurdle rates between two countries.

CONCLUSIONS

Using fitted values from the economic/financial risk equation, we estimated Treasury spreads, which summarize the economic and financial risk in each country, given the independent variables (credit rating, exchange rate volatility, and trade policy, including

capital flow restrictions). Using the fitted value for the Treasury spread, we then calculate the office market capitalization rate (yield) for each country. For opportunistic office investment in the United States, we use a target hurdle rate of 20 percent. We scale up or down from that hurdle rate based on the relative "fitted" cap rate. For example, if the U.S. fitted cap rate is 8.0 percent, and Germany has a fitted cap rate of 6.0 percent, then opportunistic hurdle rates adjusted for risk in Germany would be 6/8ths of 20 percent, or 15 percent. This calculation assumes that the income yield (represented by the cap rate) constitutes most of the return, so variations in the cap rate based on variations in risk across countries should be reflected proportionately in the appreciation return as well. If total return data were widely available across countries and property types, we would estimate the equations directly with the total return series rather than the cap rate series. The estimated hurdle rates are really a spread (or more precisely, a ratio) to the U.S. hurdle rate, which is assumed. Using this two-equation model, the simulated hurdle rates, with the U.S. rate assumed to be 20 percent, vary from a low of 15.9 percent for many of the Western European countries to a high of 35.4 percent for Russia. Thus, the hurdle rates for opportunistic office investments in Western Europe are 19.0 percent, one percentage point lower than in the United States, whereas the hurdle rate in Russia is 15.4 percentage points higher than in the United States. Hurdle rates in Latin America tend to be at the upper range of this spectrum.

Table III: Global Hurdle Rates, Opportunistic Office Investment, Selected Countries1999

Country	Rate
Netherlands	15.9%
Germany	15.9%
Japan	16.5%
Italy	17.6%
Singapore	18.6%
United States	20.0%
Hong Kong	24.2%
South Korea	27.2%
Czech Republic	29.0%
Indonesia	31.4%
Mexico	32.8%
Philippines	33.4%
Russia	35.4%

Table IV: Regional Hurdle Rates

Region	Rate
West Europe	19.0%
East Europe	30.4%
Latin America	31.8%
Asia Tigers	23.5%
Other East	29.1%
Asia G-7	17.6%