



# The unsung impact of currency risk on the performance of international real property investment

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## ABSTRACT

The paper revisits the currency risk debate to ascertain the statistical significance of currency risk on the return of international real property investment, especially in a period of increased exchange rate volatility. After statistical analyses of the returns of a portfolio of office investments in seven Asia Pacific cities over the 1986 to 2007 period, it was found that currency risk had a statistically significant positive impact on the performance of the portfolio of office investments. This is confirmed by the results of stochastic dominance test. If the results of this study are verified by subsequent studies, and the past reliably presages the future, they would imply that investors holding portfolios of real property investments in the sample markets might not need to be unduly concerned with currency risk.

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## 1. Introduction

International investment in property has become a persistent feature of real estate markets in the developed economies. Real estate investors and advisers increasingly act in a global capacity. Cross border activity means that real estate investment must focus not only on cash flow patterns—changes in rents and capital values—but also on the impact of currency movement. Incorporating exchange rate volatility into the analysis of an international investment can substantially alter the expected return and risk characteristics of the investment (see Sirmans & Worzala, 2003). Although several studies have concluded that currency risk does not have statistical significant effect on the performance of a diversified international real estate portfolio, investors' concern over the ravages of currency risk (see Balogh & Sultan, 1997; Newell & Worzala, 1995) has led to experimentation with various means of hedging international real property investment returns (see for example, Delaney, 1987; Johnson, Worzala, & Lizieri, 2002; Worzala, Johnson, & Lizieri, 1997; Ziobrowski

& Ziobrowski, 1993, 1995). However, it has been shown mathematically that currency risk cannot be completely hedged away (McGowan, Asabere, & Collier, 1987) notwithstanding the cost of currency hedging.

Therefore, the paper revisits the currency risk debate with the objective of ascertaining the significance of exchange rate movements on the performance of a portfolio of international real estate investments especially in a period of increased exchange rate fluctuation and uncertainty. Specifically, it is hypothesized that currency risk has a significant negative impact on US dollar-denominated portfolio of international office property investments. This is operationalised through statistical tests of the results of an empirical study of office investments in seven Asia Pacific cities (including cities that were severely affected by the Asian currency crisis) over the period 1986Q2–2007Q3 inclusive. This study differs from others by analyzing data for before, during and after, the Asia currency crisis period.

The next section therefore provides a brief review of a selected relevant literature. This is followed by a discussion of data sourcing and management after which the analyses, interpretation and discussion of the results are presented. The final section deals with concluding remarks.

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## 2. Literature review

The benefits of international diversification are comprehensively documented in the literature. For example, Barry and Lockwood (1995), Gordon (1991), Jorion (1985), Levy and Sarnat (1970), Ripley (1973), Solnik (1974), Solnik and McLeavey (2003), and Sweeney (1993) to name a few, have concluded that international portfolios provide higher returns with lower variances than purely domestic portfolios due to low correlations between different national economies. This appears to be the general consensus of past researchers notwithstanding Goetzmann, Li, and Rouwenhorst's (2001) contention, which has been controverted by Forbes and Rigobon (2002), that the benefits of international diversification are overstated. However, the return from an international portfolio (whether the benefits are overstated or not), is exposed to currency risk as a result of the investor owning a claim in a foreign currency-denominated, time-deferred cash flow (Jacque, 1996).

### 2.1. Currency risk

Exchange rates movements have serious implications on the profitability of international real estate investments through the interplay of movements between the investor's home country currency and the foreign currency. Balogh and Sultan (1997) reported that fluctuating exchange rate is the most common risk of overseas investment. According to Ziobrowski and Curcio (1991) and Radcliffe (1994), the exchange rate risk of investments made in a single foreign country can be substantial (see also Ziobrowski & Boyd, 1991; Ziobrowski & Ziobrowski, 1993). This conclusion has been concurred by Worzala (1995). Similarly, Newell and Webb (1996) found the contribution of currency risk to the risk profile of an international mixed-asset portfolio to be significant for the period 1985–1993. This additional risk was particularly evident in real estate and bonds—the impact of currency risk on stocks was only marginal compared to real estate and bonds.

However, Jorion (1990) concluded that from an investor's viewpoint, exchange rate exposure would be important only if it represented a significant component of an asset's risk. Similarly, Solnik (1996) argued that currency fluctuation has never been the major component of total return on a diversified portfolio over a long period of time because the depreciation of one currency is often offset by the appreciation of another (see Addae-Dapaah & Choo, 1996; Addae-Dapaah & Goh, 1998; Biger, 1979). This supports Froot (1993) who concluded that the contribution of currency risk to the total return of an international diversified portfolio winnows out over time. Solnik and McLeavey (2003) replicated this finding by concluding that the contribution of currency risk decreases with the length of the investment horizon as exchange rates tend to revert to the mean.

Notwithstanding the disagreement on the impact of exchange rate volatility on the returns of foreign investments, currency risk management is considered to be the most important area of risk management in international investment (Solnik, 1996), especially if the exchange rate exposure is significant. In view of this, there has been considerable interest, among researchers, in exploring currency-hedging possibilities to mitigate the currency risk of an international real estate investment. This presupposes that exchange rate volatility has a significant negative impact on foreign real estate investment returns. Since this is not conclusively proven, the basic hypothesis of this paper is that exchange rate volatility has a statistically significant impact (positive or negative) on the returns of a portfolio of international real property investments.

## 3. Data sourcing and management

Ex-post quarterly data of office capital and rental values for seven Asia Pacific cities: Singapore, Kuala Lumpur, Tokyo, Hong Kong, Makati,

Melbourne and Jakarta, were extracted from Jones Lang LaSalle Asia Pacific Property Digest. The choice of the cities (especially Tokyo, Hong Kong and Melbourne) was based on the availability of data. Moreover, Singapore, Kuala Lumpur, Makati and Jakarta were selected for the study for being the cities that were mostly affected by the Asian currency crisis. In addition, quarterly market exchange rates were obtained from DataStream and Bloomberg databases. These exchange rates are used to convert all foreign office investment returns (in local currency) to US dollar returns.

The study covers a period of twenty-one and a half years from 1986Q2 to 2007Q3 inclusive (Period 1). This period is subdivided into two: pre-Asian Financial Crisis—1986Q2 to 1995Q4 (Period 2)—and post-Asian Financial Crisis—1996Q1 to 2007Q3 (Period 3). Period 3 is further divided into two sub-periods: 1996Q1 to 1998Q4 (Period 4—period of the Asian Financial crisis) and 1999Q1 to 2007Q3 (Period 5—the actual post-Asian Financial crisis era).

Furthermore, the following assumptions are made to facilitate the testing of the hypothesis:

- 1) The portfolio of investments consists of office properties only (due to data constraint).
- 2) The investor has/can raise sufficient funds for his investments in office properties. This assumption is aimed at circumventing the problem of capital rationing.
- 3) The investor adopts the mean-variance approach in investments; i.e. he is rational and seeks to attain Markowitz's efficient investments lying on the efficient frontiers.
- 4) All funds invested in foreign office properties will be repatriated to the home country at the end of the holding period (i.e. each quarter). The assumption of quarterly repatriation of returns is certainly preposterous for investment in real estate. However, if currency risk ever has a significant devastating effect on international property investment, the assumption of quarterly repatriation of returns (although seemingly unrealistic) may be the best way to detect the effect. If the assumption leads to a finding that currency risk has a statistically significant negative impact on property portfolio returns, sensitivity analyses will be conducted by relaxing the quarterly repatriation of returns in favour of 5 and 10-yearly repatriation of capital returns and annual repatriation of rental returns. However, there will be no need for further analyses if the results show that currency risk does not have significant negative impact on property returns as currency risk is more devastating in the short, than in the long, term. In view of this assumption, capital gains tax is ignored in all the analyses as accounting for it would grossly distort the results. The reason for this is that there are penal capital gains tax rules and other taxes for the disposal of property within 5 years in some countries (e.g. Malaysia, New Zealand and Hong Kong) where such taxes would not be applicable under normal circumstances. Although quarterly holding period is assumed for the analyses, it is reasonable to state that in reality, astute investors would play within the tax laws to avoid paying "unnecessary" taxes. At any rate, no real property investor will liquidate his assets quarterly albeit the analyses are premised on quarterly holding periods—the assumption is made purely to facilitate detection of the ravages of currency risk, if any. Thus, the reader must take note of the caveat that the paper does not account for tax, except property tax.

## 4. Currency-unadjusted returns from office investment

The data are used to calculate the quarterly holding period currency-unadjusted office investment returns. The quarterly returns are averaged over the full study period to determine the time-weighted average return (Table 1)—Arithmetic mean is most widely used in portfolio analyses (Geltner & Miller, 2001). Furthermore, arithmetic mean is supposed to be more accurate than geometric

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