

International Diversification in Frontier Real Estate Markets

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Abstract

The paper investigates the effects of international diversification in reducing risk. The test is applied on real estate returns by analyzing global portfolios investing in the GCC real estate. The correlations between markets are not low to produce effective diversification. Nine out of the twelve portfolios produced high enough correlations that when opposite positions (long and short) are taken, only then we began to see significant reduction in risk. When comparing the effects of GCC real estate with BRIC in a global equity portfolio context, both GCC real estate and BRIC do not produce diversification benefits when a long position is taken on developed markets. Nonetheless, when taking a long position in GCC real estate, effective diversification is found when taking short positions on developed markets. A similar case can also be concluded when taking long positions on BRIC and shorting the developed markets. The results suggest serious concerns on effective diversification among global investors with the current long only exposure to real estate in the region and suggests the introduction of shorting financial instruments for active hedging and portfolio optimization.

Keywords: Diversification, Real Estate, Emerging Markets, Asset Allocation, Capital Markets, Investment Management

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1. Introduction

During the period 2013-2016, the GCC¹ governments have taken the serious initiatives of transforming to a global financial center. Attracting foreign capital and liberalizing financial markets are the natural prerequisites to achieve this plan. Despite the attractive returns gained from the regional real estate markets during the past four years, local investors still dominate trading activity in the GCC with the exception of Dubai. As such, global investors have casted some concerns on future diversification benefits as markets in the region become more integrated. This paper attempts to quantify the benefits of regional real estate diversification in the GCC. The paper follows the work of Moosa et al. (2015) to test the effectiveness of GCC diversification in reducing risk as measured by the variance of the real estate rate of return.

The vast majority of studies on the topic of international diversification benefits have mainly investigated U.S. and other major developed markets, such as the U.K., Canada, Australia, Japan, Germany, France, Ireland and Hong Kong. Recently, however, much focus has been on emerging markets and the unexplored benefits of portfolio diversification. Nevertheless, most studies have concentrated on selectively investigating certain emerging markets, mainly B.R.I.C²., Turkey, Malaysia and South Africa. The present literature thus lacks any extensive analysis of the potential benefits of diversification in GCC real estate markets. The scarcity of research on such markets is mainly due to (i) lack of substantial and adequate data and/or (ii) the lack of confidence in

¹ GCC refers to Gulf Cooperating Countries, namely Saudi Arabia, Kuwait, United Arab Emirates, Bahrain, Oman and Qatar

² The abbreviation B.R.I.C is widely used between professional money managers referring to Brazil, Russia, India and China.

the markets' investment climate, hence, findings may be thought to be unpractical and useless.

The benefits of international real estate diversification have become more apparent with the enhancement of information technology and advanced communication means. Although studies still identify home bias regardless of the benefits of global asset allocation, practitioners and academics have continued to explore different means of enhancing portfolio return while controlling risk. Over the period 1993-2005, Cavaglia et al. (2006) found that a global country-neutral strategy gained a premium of approximately 1.5 per cent per year over the world return.³

It is evident that home bias exists in many markets. French and Porteba (1991) state that a lack of diversification "is a result of investor choices, rather than institutional constraints". From a practical perspective, Allen (1991) notes that global investing can be problematic. Allen (1991) summarises the challenges facing money managers as follows:

- (i) The choice of an unhedged dollar-denominated index in which the performance of an active equity manager is measured.
- (ii) Security selection decisions by the active manager within each country.
- (iii) Overweighting or underweighting of a country relative to the index based on the country's equity returns.
- (iv) Overweighting or underweighting of a country relative to the index based on the country's expected currency returns.

³ The world benchmark was proxied by the FTSE World Index (or what is recently referred to as FTSE All-World Developed Market Index).

- (v) The timing of purchases and sales of securities (which implicitly impacts on the currency factor).
- (vi) The choice of the benchmark percentage of the portfolio that is to be hedged passively against currency fluctuation.
- (vii) Active decisions in the currency forward markets that cause the portfolio's return to deviate from that of the passively hedged benchmark.

Niendorf and Lang (1995) suggested that investors should consider international equity mutual funds as these enhance the risk-adjusted portfolio and eradicate investor hesitance in entering foreign markets. Alternatively, strategic asset allocation was advised by Grinold and Meese (2000) when considering international investing. The study found that the bulk of international investments are hedged as most portfolio managers are home biased. Furthermore, Evnine and Henriksson (1987) emphasised that successful market-timing is more powerful than portfolio insurance strategy using options. Consequently, Levy and Spector (1996) found that time diversification is more powerful than cross-asset diversification. The study found supporting evidence that portfolio managers should concentrate on risky stocks which ultimately will attain higher mean-returns with relatively low risk.

2. Diversification Benefits in Emerging Markets

Many scholars have observed the investment flows of global portfolios in an attempt to determine the direction of international investors. Khoury (2003) found that international funds and country-specific funds have outperformed domestic funds. He stated that “an

American investor typically holds an undiversified portfolio of assets consisting largely of the house". Although Khoury (2003) advocated the proposition that portfolio theory suggests a 40-60 per cent allocation of foreign securities in a typical portfolio, American investors ignore the positive aspects of international investing and focus on the negative surprises such as Mexico in 1994 and Argentina in 2002. Bohn and Tesar (1996) found that U.S. investors are triggered by time-varying investment opportunities. The study, however, confirms home bias in U.S. portfolios.

Nonetheless, investing in emerging markets remains an asset class of interest. Saunders and Walter (2002) argue that it is hard to differentiate emerging market equities as a separate asset class. The study identifies financial liberalisation as the reason for increasing capital flows in emerging markets. Consequently, rapid capital flows into those markets have resulted in an increased integration with developed markets. The study relates the integration to (i) improved technology over time, (ii) increased country funds, and (iii) increased American Depository Receipts (ADRs). The enhancement of financial products along with improved information technology has advanced the facilitation of capital flows among world financial markets.

3. International Real Estate Securities Diversification

Real estate securities and their effect on international portfolio diversification are well documented in the finance literature. While the classical paper of Hendershott and Haurin (1990) suggests that real estate data indicate higher risk-adjusted returns than stocks and bonds, other literature on the effects of international real estate diversification has

presented contrary results. This variation in results is most likely due to differences in data periods, markets tested, and the methodologies used. However, Curcio and Gaines (1977) encouraged portfolio managers to adapt the concept of continuous portfolio revision. Such revision will allow money managers to “broaden” their perspective on alternative investments including divestitures, acquisitions and restructuring. This approach assists portfolio managers to constantly revert to optimisation in asset allocation.

Hudson-Wilson and Stimpson (1995) tackled the effect of the four-quadrants in real estate, namely, private equity, private debt, public equity and public debt, proxied by NCREIF, the Giliberto-Levy Mortgage Index, NAREIT and (PPR) returns, respectively. Gyourko and Nelling (1996) assessed different types of properties owned by REITs and examined their effects in systematic risk and diversification. Lee and Stevenson (2005) considered the limitations of using modern portfolio theory (MPT) in constructing a real estate portfolio given the instability of portfolio weights and the decline of optimal portfolios performance when asset mean returns are estimated out of a sample.

Chua (1999) extends the literature by looking at the benefits of international real estate diversification to an existing internationally diversified investment portfolio that already invests in bonds, equities and gold. Using mean-variance portfolio optimisation and correcting for taxes, transaction costs and management fees, Chua (1999) confirms the viability international real estate plays in global mixed-asset investment portfolios. More recent, Ciochetti et al. (2015) investigated the benefits of international diversification using

a rational sentiment-based model private and public real estate equities. The study confirms that diversification across countries does contribute to reducing risk.

4. Literature Review: Evidence from Emerging Markets

Diversification among emerging markets has evolved to become important during the past decade. Benefits from investing in emerging markets are well documented in the literature. Moreover, the consensus view is that emerging markets have higher average returns, low correlation with developed markets, greater serial correlation and greater volatility (Eaker, Grant and Woodlard, 2000). Moreover, the benefits of including emerging markets in a global portfolio context were proven to be rewarding. The question then becomes: How much should global portfolios invest in emerging markets?

Errunza and Losq (1985) investigated the volatility of emerging markets and the types of risks associated with investing in emerging markets such as currency, political and investment risks. The study suggested that investments in emerging markets attain enough excess returns to compensate for the underlying risks. The study concludes that investments in emerging markets are not as risky as they are perceived to be. Erb et al. (1995) researched the effect of country risk on global equity selection. The study found that country credit ratings have a substantial predictive power in determining investment inflows. Numerous studies such as Bekaert et al. (1998), Bekaert and Urias (1999), Liu and Mei (1999) and Sarkar and Li (2002) took the view point of the U.S investor holding emerging market assets.

More recently, Falkenback (2009), Gallo and Chang (2010), Shen et al. (2012) and Oyedale et al. (2014) all confirm some benefits of emerging real estate markets diversification but subject to country specifics and type of real estate asset class. Much related, Akinsomi et al. (2016) focused on the geographic diversification benefits in the African real estate market from the perspective of the South African Investors. The data used were 36 property companies listed in Johannesburg stock exchange. Despite the evident diversification benefits, hesitation remains amongst investors due to regulatory and the legislative environment.

5. International Diversification without the Exchange Rate Factor

It is known that international diversification is effective when domestic and foreign assets have low and or negative correlation. Solnik (1974), Lassard (1976) and Biger (1979) have proved the effect of international diversification from the perspective of a U.S. investor.

This section will consider the local returns assuming one of the following:

- (i) the exchange rate is fixed
- (ii) the foreign currency position is fully hedged
- (iii) the foreign position is undertaken with the same foreign currency

Suppose that an investor takes positions on both domestic and global markets. As such, the weights assigned for each of these markets are β and $1 - \beta$, respectively. Therefore, the rate of return of the portfolio, R_p , is the weighted average of the rates of returns on both the domestic and foreign markets, R_d and R_f , respectively. The return on the portfolio can be written as

$$R_p = \beta R_d + (1 - \beta) R_f \quad (1)$$

The variance of the portfolio, σ_p^2 , can be presented as

$$\sigma_p^2 = \beta^2 \sigma_d^2 + (1 - \beta)^2 \sigma_f^2 + 2\beta(1 - \beta) \sigma_{d,f} \quad (2)$$

where σ_d^2 and σ_f^2 are the variances of the rates of return on the domestic and foreign positions, respectively, and $\sigma_{d,f}$ is the covariance of the domestic and foreign rates of return. Given that σ_d is the standard deviation of the domestic rate of return and σ_f is the standard deviation of the foreign rate of return, the covariance can be represented as $\sigma_{d,f} = \rho_{d,f} \sigma_d \sigma_f$, where $\rho_{d,f}$ is the correlation coefficient between the domestic and the foreign rates of return. Hence, the portfolio variance can be calculated as

$$\sigma_p^2 = \beta^2 \sigma_d^2 + (1 - \beta)^2 \sigma_f^2 + 2\beta(1 - \beta) \rho_{d,f} \sigma_d \sigma_f \quad (3)$$

The equation clearly demonstrates that the maximum risk reduction is obtained when the correlation coefficient is -1. Based on Equation (3), portfolio managers are constantly searching for negatively correlated markets. As a result, many portfolio managers began to consider emerging equity markets as markets that are relatively low and negatively correlated with developed markets. Nonetheless, many began to question the sustainability of benefiting from international diversification with the increased financial liberalisation and market integration. Baxter and Jermann (1997) presented evidence of diminishing international diversification benefits. Alternatively, international diversification can still reduce risk when taking opposite (long-short) positions. Assuming that short sales are

available, an investor can take a long position in one market and a short one in the other. To illustrate, suppose an investor takes a long position in the domestic market and shorts the foreign market, the portfolio rate of return can be calculated as

$$R_p = \beta R_d - (1 - \beta) R_f \quad (4)$$

in which the portfolio variance can be calculated as

$$\sigma_p^2 = \beta^2 \sigma_d^2 + (1 - \beta)^2 \sigma_f^2 - 2\beta(1 - \beta) \rho_{d,f} \sigma_d \sigma_f \quad (5)$$

Hence, the maximum risk reduction is achieved when $\rho_{d,f} = 1$.

However, most studies on international diversification did not account for statistical significance of correlations. Most studies have found numerical difference in standards of deviation as a measure of risk reduction. Moosa and Al-Deehani (2009) suggested that testing the effectiveness of hedging should include the variance ratio test, in which the null is $\sigma_d^2 = \sigma_p^2$. When the null hypothesis is rejected, the alternative hypothesis is favored as $\sigma_d^2 > \sigma_p^2$.

6. Methodology

Many studies developed quantitative techniques that aimed at maintaining a robust portfolio optimisation process. Rudin and Morgan (2006) constructed a portfolio diversification index (PDI) that measures the number of unique investments in a portfolio and assesses cumulative diversification benefits across asset classes. Fabozzi et al. (2007) discussed ‘robust optimization’ which incorporates estimation errors into the portfolio optimization process.

Dynamic asset allocation and portfolio rebalancing became common practice in the investment industry. Assoe et al. (2006) looked at the debate as to whether asset allocation or security selection is important in investment performance. Yet, Sun et al. (2006) were able to assert the robustness of dynamic portfolio rebalancing. The study introduced the quantification of the cost of rebalancing a portfolio strategy and found that optimal rebalancing outperformed the traditional rebalancing of a portfolio.

In this study, a hedging approach presented by Moosa et al. (2015) is applied to examine the effect of GCC real estate on global all-equity portfolios. Hedging effectiveness is quantified by the measurement of the reduction in the variance of an unhedged (domestic) asset in addition to one or more foreign assets. Hedge ratios are calculated upon constructing portfolios by minimizing the variance of the rate of return on the hedged position of the portfolio. Therefore, a two-asset portfolio, R_p is defined as

$$R_p = R_d - hR_f \quad (6)$$

where R_d and R_f are the rates of return for the domestic asset and foreign asset, respectively and h is the hedge ratio. Consequently, the variance, for the portfolio rate of return, σ_p^2 is written as

$$\sigma_p^2 = \sigma_d^2 + h^2\sigma_f^2 - 2h\sigma_{d,f} \quad (7)$$

where σ_d^2 and σ_f^2 are the variances of the rates of return on the domestic and foreign assets, respectively and $\sigma_{d,f}$ is the covariance of the domestic and foreign asset rates of return. Minimum-risk hedge ratio is obtained from the first order condition.

$$\frac{\partial(\sigma_p^2)}{\partial h} = 2\sigma_d^2 h - 2\sigma_{d,f} = 0 \quad (8)$$

Therefore,

$$h = \frac{\sigma_{d,p}^2}{\sigma_f^2} \quad (9)$$

The hedging effectiveness of international diversification is based on the null hypothesis

$$H_0 : \sigma_d^2 = \sigma_p^2 \quad (10)$$

If the value of σ_d^2 is larger than σ_p^2 , the null is rejected, signifying diversification is effective in reducing risk, that is if

$$VR = \frac{\sigma_d^2}{\sigma_p^2} > F(n-1, n-1) \quad (11)$$

in which VR is the variance ratio and n is the sample size. It is further asserted by computing the variance reduction VD as

$$VD = 1 - \frac{1}{VR} = 1 - \frac{\sigma_p^2}{\sigma_d^2} = \frac{\sigma^2(R_d - hR_f)}{\sigma^2 R_d} \quad (12)$$

7. Data and Empirical Results

The empirical results presented in this section are based on the monthly data of five markets, three developed and two emerging markets covering the period January 2011 to April 2016. The three developed markets are the U.S., U.K. and Europe represented by

investable exchange traded funds (ETFs). The U.S. market is represented by S&P 500, the U.K. by FTSE 100 and Europe by Euro Stoxx 50. The emerging markets under investigation are GCC represented by the Thomson Reuters GCC Real Estate Index and BRIC represented by FTSE BRIC 50.

To test diversification effectiveness, the frontier region of the GCC performance is benchmarked against the emerging economic bloc of the famed BRIC. Therefore, it is presumed that if the results reveal statistically significant variance reduction between the GCC and developed markets, then it is safe to say that variance reduction can also be found between GCC markets and other developed markets that are not as highly correlated and are inversely affected by oil price volatility. The results can also be utilized as ways to compare performance in relation to the predominant emerging markets from a global-all equity portfolio perspective. Monthly data is used on the five markets where all but the GCC data are historical ETF rates of return. A GCC real estate ETF is currently nonexistent and, therefore, historical index returns are used as a valid proxy.

At first, the analysis starts by looking at the macroeconomic indicators of the underlying GCC markets. Table 1 presents a snapshot of major indicators. In summary, the GCC represents an aggregate GDP of approximately USD 1.4 trillion, total population of 90 million and an average GDP/capita of USD 30,000 classifying amongst the highest worldwide. With the exception of Kuwait and Saudi Arabia, the number of days to start a business is less than 10 and inflation on all markets are below 3%. Market Capitalization is USD 958 billion.

Table 1: Economic Indicators of the GCC

	GCC					
	Saudi Arabia	UAE	Kuwait	Bahrain	Qatar	Oman
GDP (bn USD)	646	349	124	32	152	66
GDP Growth (%)	22	20	17	24	22	13
GDP/Capita (USD)	20029	37622	30010	22354	59331	14982
GDP/Capita Growth (%)	4	7	-22	8	-16	-22
Inflation (%)	2	2	3	2	2	0
Population (mn)	32	9	4	1	3	4
Market Cap. (bn USD)	449	213	99	19	155	23
Export (% of GDP)	31	104	54	85	47	56
FDI (% of GDP)	1	3	0	NA	1	NA
Time to Start a Business (days)	16	8	43	9	9	6

Note: (GDP) is Gross Domestic Product, (Market Cap) is Market Capitalization, and (FDI) is Foreign Direct Investment. GDP figures are presented in (USD billions) and Population is presented in (millions). GDP, GDP/Capita, Export and Population figures presented are for 2016. Inflation and FDI are 2015. GDP Growth and Market Cap. Growth are measured as the percentage change of the period (2010-2016). NA=Not Available

Source: World Bank

Proceeding to the descriptive statistics of the monthly returns on the five markets. Table 2 reveals that the monthly GCC real estate mean returns is highest among the five markets followed closely by the U.S. while the GCC real estate also possesses the highest standard deviation (SD) followed by BRIC. Table 3 presents the correlation matrix among the five markets. The highest correlation is found between the U.S. and the U.K. while the lowest is found between the GCC and Europe. Interestingly, the BRIC seems to have larger correlations with the other markets than the GCC real estate returns.

Table 2: Descriptive Statistics

	U.S.	U.K.	EUROPE	BRIC	GCC RE
Mean (%)	1.01	0.43	0.53	-0.33	1.03
Median (%)	1.15	0.77	1.13	-1.04	0.54
Maximum (%)	10.90	8.14	10.37	16.30	25.91
Minimum (%)	-7.02	-6.77	-13.70	-17.51	-19.96
SD (%)	3.43	3.22	4.74	6.40	8.48
Skewness	0.00	-0.21	-0.39	0.16	0.15
Kurtosis	3.41	3.01	3.06	3.67	3.59

Table 3: Correlation Matrix of the Rates of Return

	U.S.	U.K.	EUROPE	BRIC	GCC RE
U.S.	1.00				
U.K.	0.82	1.00			
EUROPE	0.76	0.80	1.00		
BRIC	0.73	0.64	0.56	1.00	
GCC RE	0.24	0.39	0.18	0.32	1.00

Figure 1 provides a graphical representation of the cumulative returns of the five markets under investigation. Clearly the GCC real estate index shows an apparent volatility in comparison with the four other markets while the BRIC shows a stable downward trend.

Figure 2 shows the plot of the variance ratio (σ_a^2 / σ_f^2) relating to the twelve portfolios representing all possible combinations between developed markets and the GCC real estate index. The horizontal line represents the five per cent critical value of the VR (=1.513), such that a significant variance ratio is plotted above the horizontal line of the critical value. When similar positions are taken, three out of twelve possible combinations are above the line as seen in Figure 2(a). As such, effective diversification with similar positions taken is only obtained in three out of twelve cases. However, when opposite positions are taken,

nine out of twelve cases produced effective diversification in all possible portfolios, (represented by the dots in Figure 2(b) were above the critical line.

Figure 1: Cumulative Performance of Markets (re-based at 100)

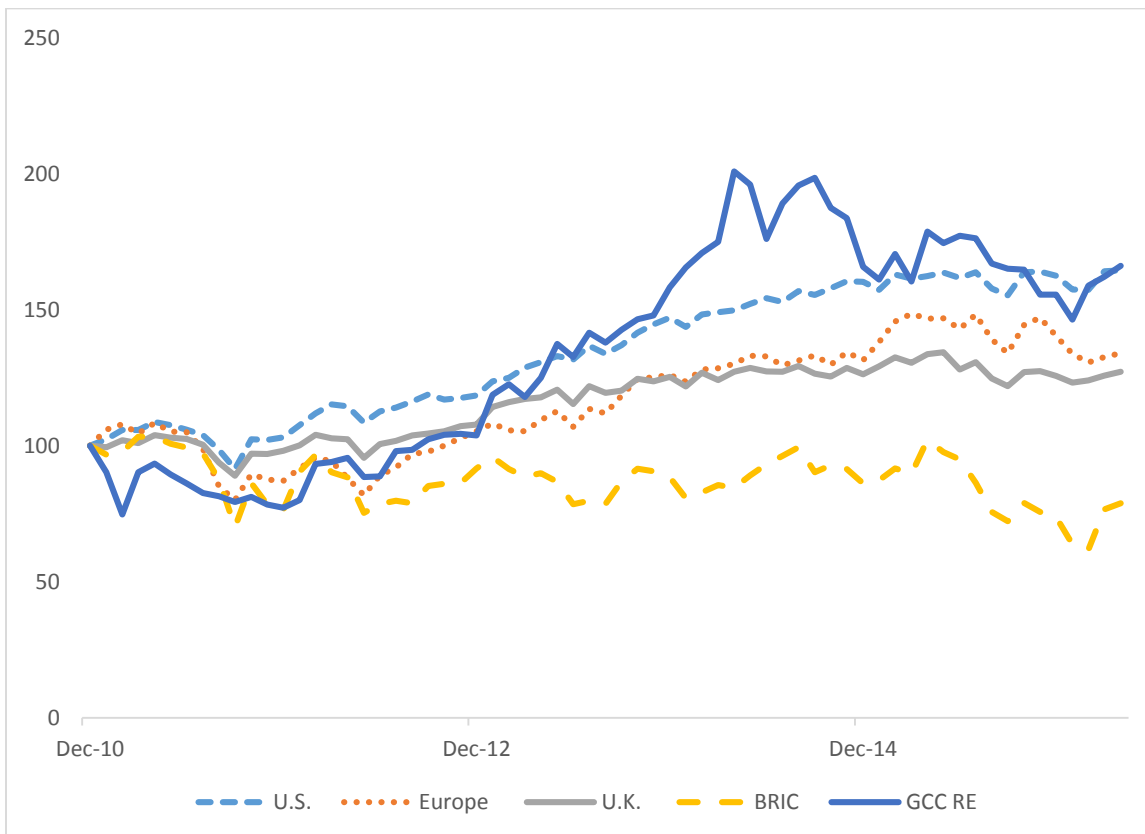
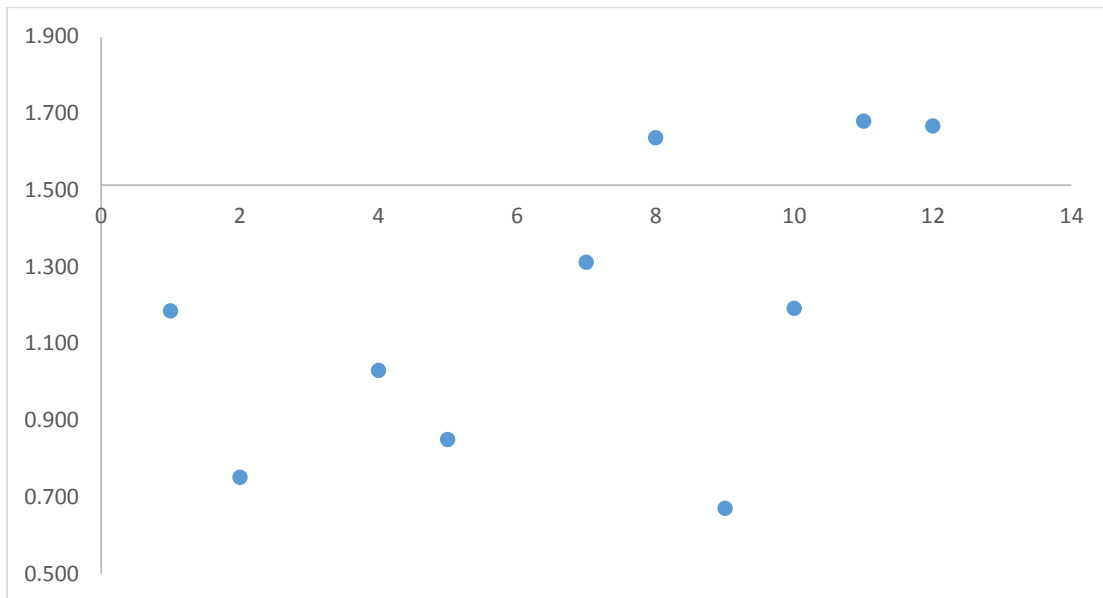


Figure 2: Variance Ratios against the 5% Critical Value (GCC as Emerging Market)

(a) Similar Positions



(a) Opposite Positions

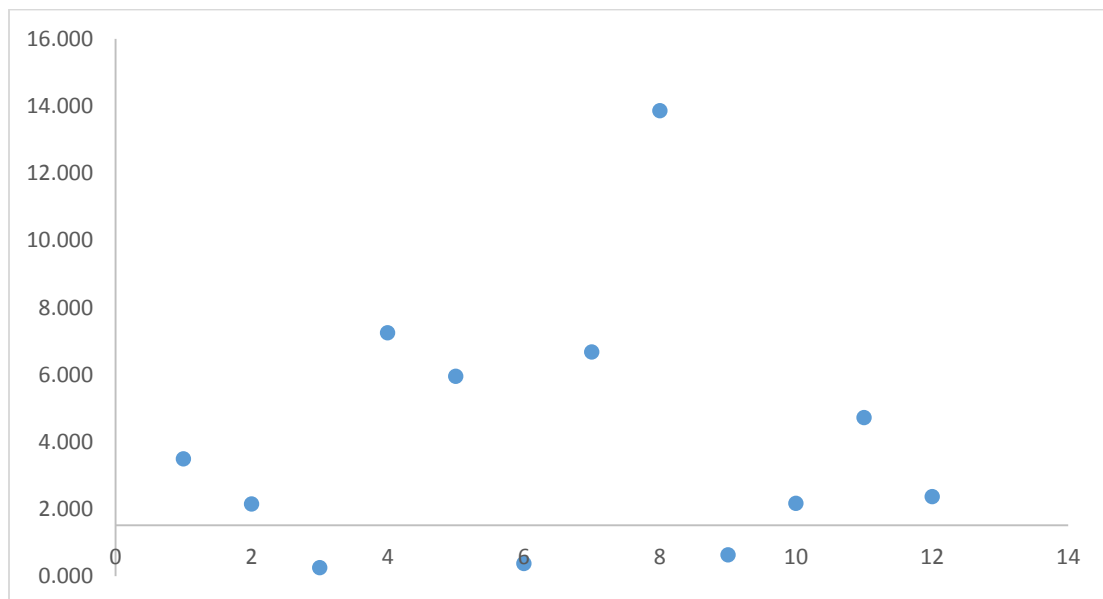


Table 4: Effective Diversification with a Long Position on the Foreign Market (GCC as Emerging Market)

Domestic Market	Foreign Market	σ_d^2	σ_p^2	VR	VD
U.S	U.K.	11.780	9.936	1.186	0.157
U.S.	Europe	11.780	15.665	0.752	-0.330
U.S.	GCC	11.780	44.396	0.265	-2.769
U.K.	U.S.	10.384	10.084	1.030	0.029
U.K.	Europe	10.384	12.221	0.850	-0.177
U.K.	GCC	10.384	25.861	0.402	-1.490
Europe	U.S.	22.434	17.096	1.312	0.238
Europe	U.K.	22.434	13.711	1.636	0.389
Europe	GCC	22.434	33.463	0.670	-0.492
GCC	U.S.	71.896	60.321	1.192	0.161
GCC	U.K.	71.896	42.796	1.680	0.405
GCC	Europe	71.896	43.127	1.667	0.400

Table 5: Effective Diversification with a Short Position on the Foreign Market (GCC as Emerging Market)

Domestic Market	Foreign Market	σ_d^2	σ_p^2	VR	VD
U.S	U.K.	11.780	3.364	3.502	0.714
U.S.	Europe	11.780	5.475	2.152	0.535
U.S.	GCC	11.780	45.666	0.258	-2.877
U.K.	U.S.	10.384	1.431	7.257	0.862
U.K.	Europe	10.384	1.742	5.961	0.832
U.K.	GCC	10.384	27.298	0.380	-1.629
Europe	U.S.	22.434	3.357	6.683	0.850
Europe	U.K.	22.434	1.618	13.869	0.928
Europe	GCC	22.434	34.985	0.641	-0.559
GCC	U.S.	71.896	33.028	2.177	0.541
GCC	U.K.	71.896	15.218	4.724	0.788
GCC	Europe	71.896	30.252	2.377	0.579

Tables 4 and 5 show the underlying calculations of the portfolios represented in Figure 2.

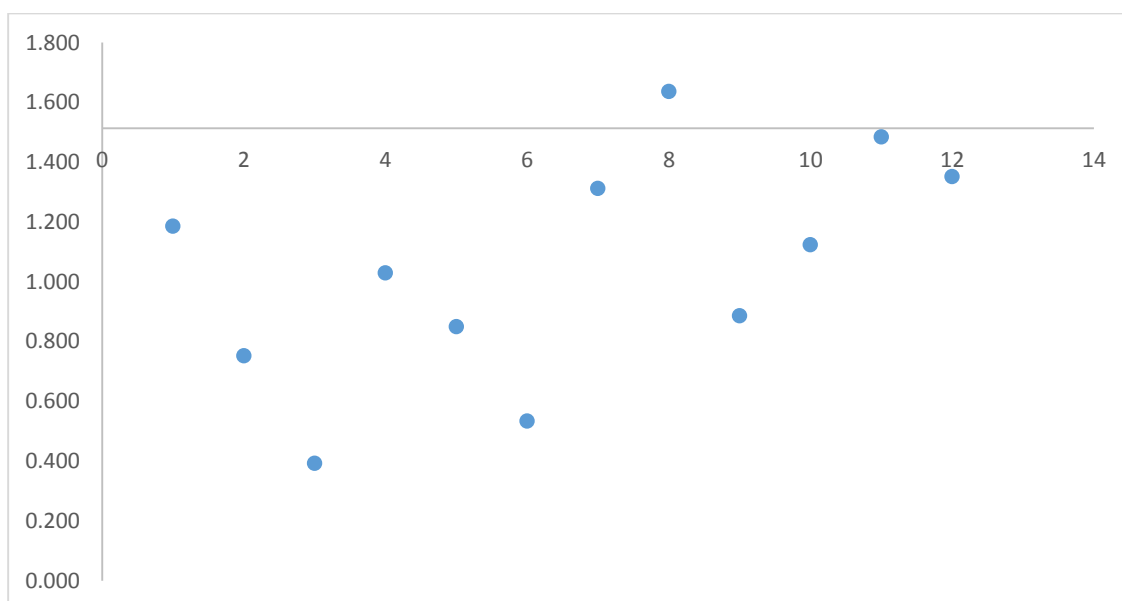
The results confirms when opposite positions are taken, the variance reduction ranged from 53 to 93 per cent. The 93 per cent variance reduction was witnessed when taking a long position in Europe and a short position in the U.K. It is interesting to see that when the GCC markets take the short position it does not produce variance reduction to all three

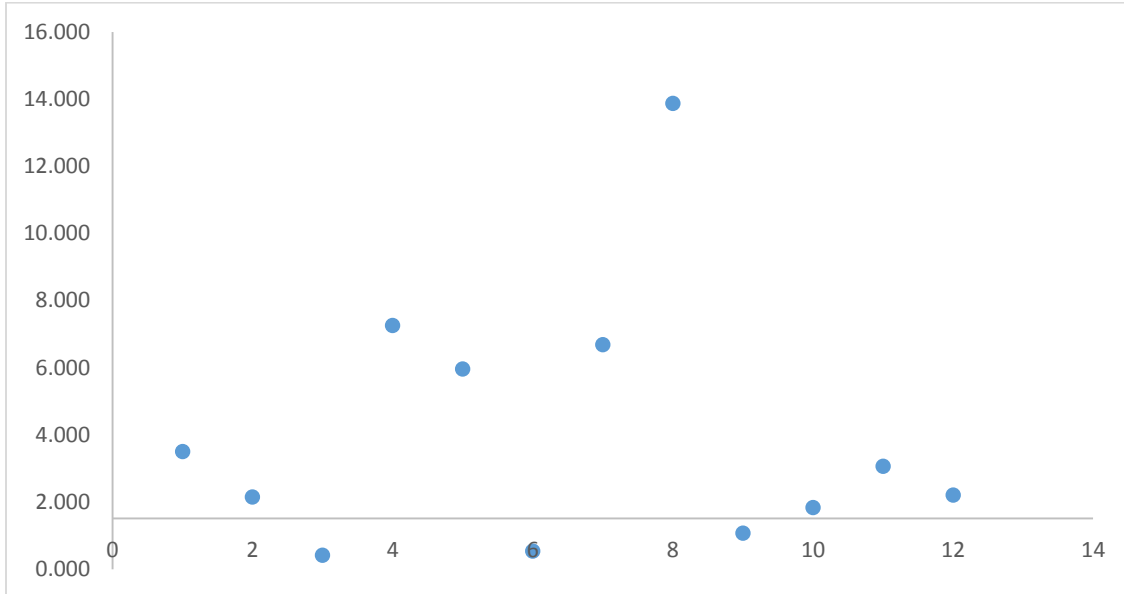
developed markets. In fact, risk is enhanced. However, when a long position is taken on the GCC and a short position is taken on the developed markets, the average variance reduction is found to be 64%.

When substituting the GCC real estate index with BRIC, the portfolio returns and variance reduction are measured and compared against the results with GCC real estate allocation. Figure 3 shows the plot of the variance ratio for the twelve portfolios. With similar positions, Figure 3(a) reports only one portfolio result in effective diversification. The variance reduction calculations are shown in Table 6. The percentage reduction ranged from 3 per cent to 39 per cent.

Figure 3: Variance Ratios against the 5% Critical Value (BRIC as Emerging Market)

(a) Similar Positions



(b) Opposite Positions

When opposite positions are taken, nine out twelve portfolio combinations are above the critical line, giving effective diversification. Similar to the GCC, when a short position is taken for BRIC, variance reduction is not found with the exception of the case where Europe is the domestic market with a long position. The results details of the four markets, are presented in Tables 6 and 7. The highest effective diversification is found when taking opposite positions on developed markets. Furthermore, when BRIC is the domestic market and has a long position while a short position is applied on the three other developed markets, the average variance reduction is 56%. Therefore, it can be concluded that effective diversification exist for the BRIC markets taking opposite positions with developed markets

In summary, when comparing the effect of GCC real estate with BRIC in a global equity portfolio context, both GCC real estate and BRIC do not produce diversification benefits when a short position is taken while a long position is taken on developed markets. Nonetheless, when taking the viewpoint of GCC real estate investors, effective diversification is found when taking short positions on developed markets. A similar case can also be concluded when taking long positions on BRIC and shorting the developed markets.

Moreover, by the taking the viewpoint of the global investor, both GCC and BRICs are more effective in bear markets. The question then becomes; why should investors consider investing in GCC real estate if the diversification effects are similar? First, allocating to GCC real estate is considered to be an effective hedge against volatile oil fluctuations. This is specifically important to hedge funds and alternative investment managers with commodity exposures. Al-Abduljader (2009) empirically investigated multiple GCC sectors and found the real estate correlation with oil prices to be among the highest. Second, U.S dollar-based funds investing in emerging markets are in constant search to minimize foreign exchange volatility and, therefore, the GCC allocation would become a more effective hedge compared to BRIC as all GCC currencies are pegged against the U.S. dollar. Third, the mere investment appetite on BRICs, per se, seems to witness a significant decline. A major BRIC ETF has witnessed a 69% decline over the past five years in primary outstanding shares. Cooper and Farooq (2013) described the grouping as 'loose club' while Evenett (2015) stated 'time for a rethink'. The arguments made are that BRICS are perceived to benefit mostly China and India with 'little or no relevance' to the

remaining countries, (Viera and Quiques (2016). Establishing the GCC as an alternative is not an exclusive conclusion but rather a valid option among other markets for the investing public.

Table 6: Effective Diversification with a Long Position on the Foreign Market (BRIC as Emerging Market)

Domestic Market	Foreign Market	σ_d^2	σ_p^2	VR	VD
U.S	U.K.	11.780	9.936	1.186	0.157
U.S.	Europe	11.780	15.665	0.752	-0.330
U.S.	BRIC	11.780	30.010	0.393	-1.548
U.K.	U.S.	10.384	10.084	1.030	0.029
U.K.	Europe	10.384	12.221	0.850	-0.177
U.K.	BRIC	10.384	19.461	0.534	-0.874
Europe	U.S.	22.434	17.096	1.312	0.238
Europe	U.K.	22.434	13.711	1.636	0.389
Europe	BRIC	22.434	25.329	0.886	-0.129
BRIC	U.S.	40.990	36.466	1.124	0.110
BRIC	U.K.	40.990	27.608	1.485	0.326
BRIC	Europe	40.990	30.317	1.352	0.260

Table 7: Effective Diversification with a Short Position on the Foreign Market (BRIC as Emerging Market)

Domestic Market	Foreign Market	σ_d^2	σ_p^2	VR	VD
U.S	U.K.	11.780	3.364	3.502	0.714
U.S.	Europe	11.780	5.475	2.152	0.535
U.S.	BRIC	11.780	28.331	0.416	-1.405
U.K.	U.S.	10.384	1.431	7.257	0.862
U.K.	Europe	10.384	1.742	5.961	0.832
U.K.	BRIC	10.384	19.309	0.538	-0.859
Europe	U.S.	22.434	3.357	6.683	0.850
Europe	U.K.	22.434	1.618	13.869	0.928
Europe	BRIC	22.434	20.873	1.075	0.070
BRIC	U.S.	40.990	22.280	1.840	0.456
BRIC	U.K.	40.990	13.381	3.063	0.674
BRIC	Europe	40.990	18.525	2.213	0.548

8. Concluding Remarks

The results of this paper should shed light on some diversification benefits that investors have neglected or paid little attention to. With the eye towards the future, large global investment banks and Asian investors have now set foot in GCC markets either through branches, satellite offices, and strategic alliances or simply through close monitoring. Forecasts that emerging markets will spend USD1.1 trillion on infrastructure in the next three years apparently has multiple effects on the GCC real estate market. It is crucial, however, to realize the competent design and development of real estate investment vehicles such as real estate investment trusts (REITs) and real estate ETFs all allow investors an array of structures to gain exposure on the region. Therefore, with the limited options of shorting markets through synthetic structures not available to most investors, the results would suggest serious concerns on effective diversification among the retail investor base with exposure to real estate in the region. This would cast serious doubt amongst the majority of real estate investors to effectively diversify their portfolios when exclusively investing in the region.

Real estate exposure beyond direct investment is currently immature in most of the Asian continent with the exception of sophisticated developed markets such as Hong Kong, Singapore, Tokyo and Kuala Lumpur. We hope this study stems further interest to regulators and decision makers in the continent to undertake an effective introduction to financial instruments that enable investors to gain exposure to multiple asset classes, more so in real estate, via capital markets. Furthermore, the diversification benefits of frontier

markets, such as the GCC, in a global investor's viewpoint is increasing in importance in parallel with notable emerging markets as risk/return profiles are relatively competitive. The rise in the term 'frontier markets' is arguably setting the stage for investors to analyze markets possessing differentiating, yet promising, investment characteristics to alternative investors. It is, therefore, suggested that future research undertakes further investigation of other frontier markets in a global portfolio context.

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