

**AN ANALYSIS OF THE DIVERSIFICATION POTENTIAL OF  
EMERGING MARKETS FOR INTERNATIONAL EQUITY  
PORTFOLIOS IN RECENT YEARS**

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**Abstract**

*Our paper investigates the diversification potential of emerging markets between 2004 and 2013, which includes two global inter-twinned crises. Our results offer evidence on a diminishing contribution of emerging markets to international portfolio diversification in recent years, given the process of financial integration at global level and the underperformances of international capital markets during crisis times. We shed a new light into the diversification possibilities generated by investments in emerging markets and observe a new reality in capital markets, where emerging markets borrow the attributes of developed markets' returns and are not anymore powerful diversification tools for international investments.*

**Keywords:** *international portfolios, diversification, emerging markets, developed markets*

**JEL classification:** *G11, G15*

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**1. Introduction**

International investing became more appealing in the recent years, for individual and institutional investors alike. Generally speaking, there are two main reasons why someone decides to invest internationally: (i) diversification – having the possibility to invest in more stocks, even from other markets,

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offers the opportunity to reduce the overall risk of the portfolio; and (ii) growth – by investing internationally, an investor may take advantage of the growth potential of some economies, especially in emerging markets.

The literature on international diversification has provided enough evidence that holding international portfolios is beneficial from the point of view of risk and return. Bartram and Dufey (2001) outline the benefits of international portfolios as growth of other foreign markets, hedging consumption baskets, diversification effects and maybe sometimes even abnormal returns due to market segmentation. On the other hand, Errunza, et al (1999), by using data from seven developed and nine emerging countries in terms of returns, mean variance and Sharpe-Ratio, advance the idea that investors do not necessarily need to trade abroad in order to obtain efficient portfolios. Therefore, they show that one can obtain the same results with domestically traded securities and that it is not necessary to invest in assets that only trade abroad, giving the fact that they have also expose investors to higher risks. It needs to be pointed here that the analysis made by these authors is tributary to the US market, extremely well diversified in terms of assets that can be used for diversification purposes. At the same time, when one observed other developed markets or emerging markets, their capital markets do not provide investors with sufficient diversification opportunities so that international investments can be easily discarded.

Overall, it is generally believed that emerging markets have higher returns than developed markets but are also riskier. Except for the well known factors that influence risk such as political instability or volatile exchange rather, other circumstances can also influence the volatility of these markets. Kohers et al. (2004) make a comparison in terms of risk and returns between emerging and developed markets. During the observed period (1994-2001), the results conclude that the risk in emerging markets was higher than the risk of developed markets. Still, it may be expected the returns to be higher in emerging markets, but the data concluded that, with the exception of two of the seven analyzed periods, the return was higher in developed than in emerging markets. In conclusion, it seems that investors were not compensated for the higher risk they assumed when investing in emerging markets. Moreover, another study carried out by Bodie et al. (2010) based on data collected from 25 developed markets and 20 emerging markets from 1997 to 2001, they have analyzed and compared the risk and returns in emerging versus developed markets, concludes that the risk in developed markets is

lower than the risk in emerging markets. Therefore, it is riskier to invest in emerging than in developed countries. Second, the return was expected to be higher in emerging markets so that investors accept to bear the higher risk. Still, it seems that the returns in emerging markets were lower than the returns in developed markets. Based on these results, this study comes to sustain the idea that there is no reason to invest in emerging markets as long as the higher risk is not compensated by higher returns.

Campbell (1995) points out three main differences between emerging and developed markets related to return and risk predictability. First, these markets' correlations with the US return are closely linked to the degree of predictability in developed markets, while in emerging markets there is no association between them. Second, the amount of predictability in emerging markets is higher than in developed markets. Third, local information has a much greater role in predicting market returns in emerging markets compared to developed markets. Also, the paper shows that emerging markets have high average returns and large volatility and that by adding emerging market assets in a portfolio formed by developed market assets, the overall risk is reduced and the expected return of the portfolio increases. Another study comes to support the same idea: Divecha et al. (1992) point out the low correlations between emerging markets and also with developed markets. Therefore, one could obtain a higher return and lower risk of the portfolio by adding a stock from emerging markets to a portfolio made of assets from developed markets. More recently, Glen and Singh (2004) find some similarities and differences between developed and emerging markets. Among the similarities, we can find the fact that the relationship between size and growth was broadly the same in the two groups of countries. As differences, we can say that regarding asset structure, the emerging market firms employ a higher level of fixed assets than developed markets. Returns are similar across them, although the volatility of returns is higher in emerging countries. In addition to this, related to financing of growth, emerging markets firms' use of external equity finance is higher than that of developed firms.

Financial markets' integration is easily observable at the level of increased joint movements of financial markets, as the recent global crises have shown. However, although studies generally confirm an upward trend of correlation coefficients among domestic capital markets, their trend has been less abrupt than one might expect. At the same time, research – see, for example, Goetzmann et al. (2001), or Larrain and Tavares (2003) – showed

that cross-country correlations in stock returns change over time and are generally higher in periods of accentuated integration and of high volatility of returns.

Our paper's goal is to provide new evidence on the differences in performance between developed and emerging markets in terms of attributes of return distributions – average return, standard deviation, skewness and kurtosis – and to address the diversification potential of emerging markets for investments in developed markets. The paper is structured as follows: Section 2 presents the data and research methodology, Section 3 outlines the main results, while Section 4 concludes.

## **2. Data and research methodology**

Our research uses monthly values of country indices collected from Morgan Stanley Capital International Database between January 2004 and December 2013. All data has been collected in US dollars. Country indices – five indices for developed economies and five for emerging economies - were selected according to equity market capitalization at end 2012, provided by World Bank. Namely, we have included in our analysis the five developed countries and the five emerging countries, respectively, that had the highest market capitalization at end 2012 (see Table 1).

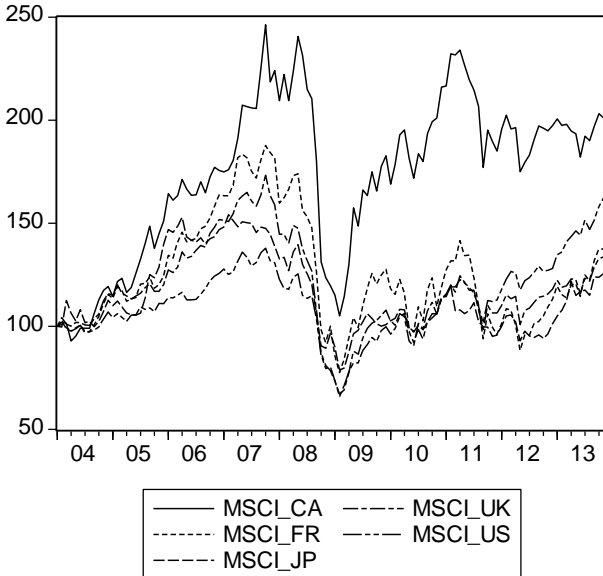
**Table 1: Market capitalization of selected developed and emerging countries, end 2013**

Country	Market capitalization at end 2012 (USD billion)	Change (%) in market capitalization, 2012 to 2011	Market category
United States (US)	18,668	19.36	Developed
China (CH)	3,697	9.10	Emerging
Japan (JP)	3,681	3.96	Developed
United Kingdom (UK)	3,019	4.01	Developed
Canada (CA)	2,016	5.74	Developed
France (FR)	1,823	16.23	Developed
India (IN)	1,263	24.42	Emerging
Brazil (BR)	1,230	0.07	Emerging
South Korea (KO)	1,180	18.72	Emerging
Russia (RU)	875	9.83	Emerging

Source: World Bank

Figures 1 and 2 show the evolution of country indices – all indices have been scaled to an initial value of 100 to allow comparison) between 2004 and 2013.

**Figure 1: MSCI Indices for developed markets, 2004-2013**



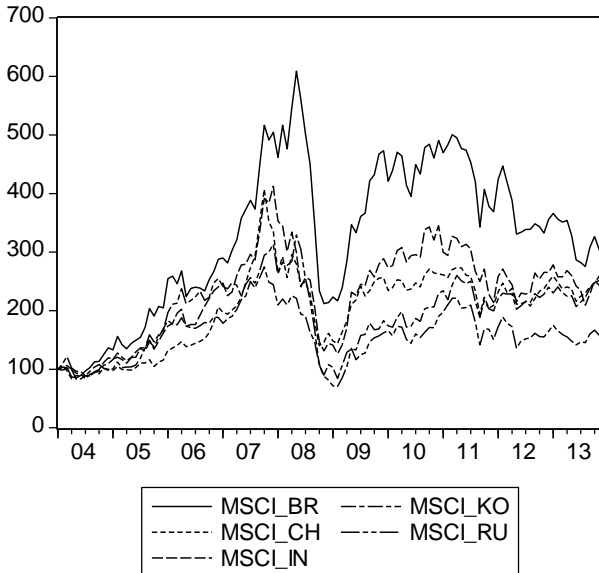
Source: MSCI Database

It is easily observable the growing trend in all indices before the end of 2007, the abrupt decline between 2007 and 2009, as a consequence of the global financial crisis, the volatile recovery until the end of 2011 and the different behaviour of developed markets indices versus emerging countries indices after 2011 – while developed markets indices grew, in the case of emerging markets one may observe either declines (Brazil) or a volatile pattern around a neutral trend.

Based on monthly values of country indices we have calculated logarithmic returns and included these countries in three equally-weighted portfolios: (1) a portfolio of developed markets – DMK, including five countries; (2) a portfolio of emerging markets – EMK, including five countries; (3) a portfolio of developed and emerging markets – DMK-EMK, including all ten countries.

We have studied the properties of these portfolios and their performance in terms of return distribution and the first four moments of this distribution – average monthly return, standard deviation, skewness and kurtosis.

**Figure 2: MSCI Indices for emerging markets, 2004-2013**



Source: MSCI Database

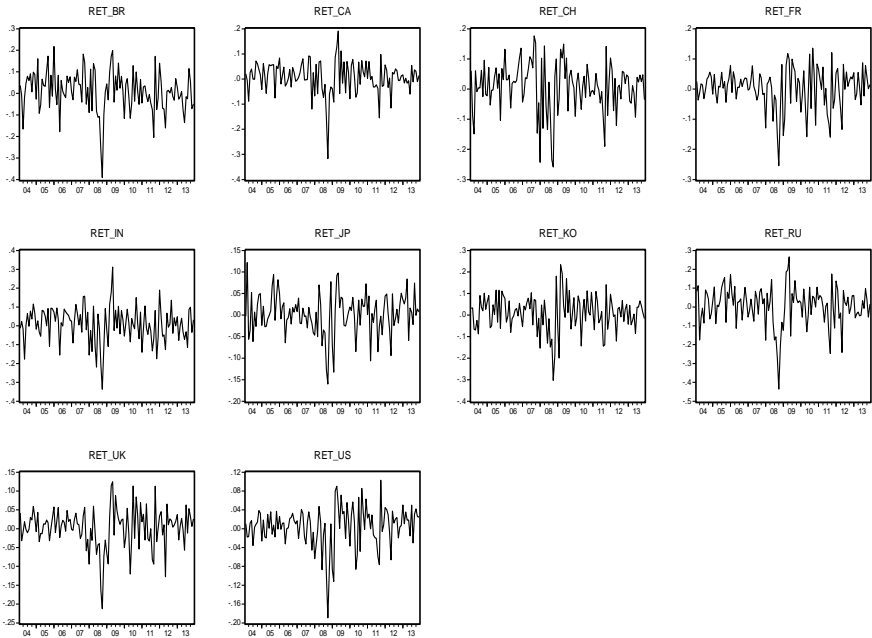
We have also compared the performance of these composite portfolios with the performance of individual countries, in order to observe the diversification potential of international holdings from the perspective of a US investor.

### 3. Results

Figure 3 shows the monthly logarithmic returns for all ten countries included in our analysis over the considered period; the descriptive statistics of these return series are presented in Table 2 (for developed countries) and Table 3 (for emerging countries). We observe the increased volatility in all country returns between 2007 and 2009, a phenomenon occurring in a crisis period when all markets experienced dramatic declines in indices values, as

well as another specific and well documented phenomenon in capital markets – volatility clustering (see Mandelbrot, 1963; Engle, 1982; Bollerslev, 1986).

**Figure 3: MSCI returns for developed and emerging markets, 2004-2013**



Source: Authors' calculations

For what concerns developed markets, Canadian market recorded the highest average return over the period (0.59%), followed by United States (0.43%), while investments in Japan would have provided American investors with the lowest average return (only 0.19%). Cumulatively, still, investments in developed markets would have generated between 2004 and 2013 returns between 23.55% (Japan) and 71.23% (Canada). These returns have been accompanied by high average volatility, as indicated by standard deviations: the highest was recorded by the French market (6.62%) and the lowest by the US market (4.32%). Another interesting features of these markets returns are the negative skewness – the highest for Canadian returns and the lowest for Japanese returns – and the leptokurtic return distributions, indicated by the

values of kurtosis, all higher than 3 – the standard value for normal distributions. The Jarque-Bera test of normality also indicates that none of these returns' series followed a Gaussian distribution.

**Table 2: Descriptive statistics of MSCI returns for developed markets**

	<b>RET_CA</b>	<b>RET_FR</b>	<b>RET_JP</b>	<b>RET_UK</b>	<b>RET_US</b>
<b>Mean</b>	0.005986	0.002800	0.001979	0.002656	0.004276
<b>Median</b>	0.010090	0.008580	0.006540	0.009720	0.011360
<b>Maximum</b>	0.190670	0.135290	0.121690	0.124400	0.102800
<b>Minimum</b>	-0.316790	-0.254030	-0.160050	-0.212320	-0.189340
<b>Std. Dev.</b>	0.063767	0.066224	0.047659	0.052261	0.043272
<b>Skewness</b>	-1.159371	-0.925656	-0.515518	-0.855571	-1.098593
<b>Kurtosis</b>	7.875524	4.455437	4.104837	5.483111	5.914843
<b>Jarque-Bera</b>	144.5220	27.49719	11.32334	45.09033	66.06451
<b>Probability</b>	0.000000	0.000001	0.003477	0.000000	0.000000
<b>Observations</b>	119	119	119	119	119

Source: Authors' calculations

The first observation to make in the case of emerging markets returns is that, except Russia, all the other four markets would have offered an American investor higher returns over the analysed period compared to the returns generated by investments in developed markets: Brazil's stock market generated a return of 0.89%, followed by Indian market, with a return of 0.77%. Russia, on the other hand, would have generated a return of only 0.39%. Cumulatively, an investment in Brazil would have provided investors with a handsome return of 106.31%, while India would have provided investors with a consistent return of 92.08%. On the other hand, investments in Russia would have increased a potential initial investment made in 2004 by only 47.32%. Regardless of the emerging market considered, the standard deviation of returns was higher compared to developed countries, which



confirms previous findings in the literature regarding the properties of emerging markets' returns (see, for example, the pioneering works of Harvey, 1994, and Cont, 2001). As in the case of developed markets returns, kurtosis values indicate leptokurtic distributions, but an interesting observation should be made concerning skewness values: all skewness values for emerging markets, although also negative, are lower (closer to zero) than the values for developed countries, thus suggesting an overall better performance of investments compared to developed countries. The Jarque-Bera test points to non-normal return distribution, a similar result to the one obtained in the case of developed markets.

**Table 3: Descriptive statistics of MSCI returns for emerging markets**

	<b>RET_BR</b>	<b>RET_CH</b>	<b>RET_IN</b>	<b>RET_KO</b>	<b>RET_RU</b>
<b>Mean</b>	0.008933	0.007697	0.007738	0.007613	0.003977
<b>Median</b>	0.009690	0.021680	0.013430	0.012400	0.022920
<b>Maximum</b>	0.217180	0.176560	0.312100	0.233590	0.265680
<b>Minimum</b>	-0.390850	-0.258480	-0.336300	-0.302750	-0.435040
<b>Std. Dev.</b>	0.094705	0.081235	0.093086	0.083369	0.103534
<b>Skewness</b>	-0.703281	-0.796400	-0.431995	-0.473343	-0.902402
<b>Kurtosis</b>	5.043641	4.137940	4.437670	4.237360	5.270501
<b>Jarque-Bera</b>	30.51797	18.99992	13.94964	12.03524	41.71195
<b>Probability</b>	0.000000	0.000075	0.000935	0.002435	0.000000
<b>Observations</b>	119	119	119	119	119

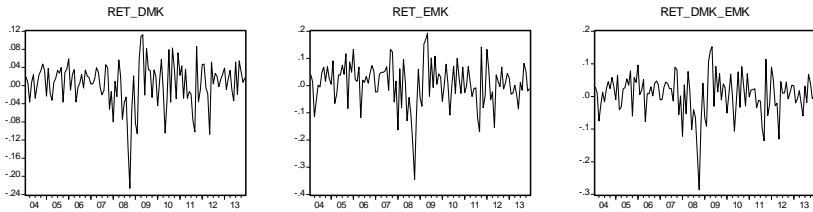
Source: Authors' calculations

We advance now towards observing the performances of portfolios constructed from the sample of ten countries. Figure 4 and Table 3 show the evolution of returns for the three portfolios – DMK, EMK and DMK-EMK – and the descriptive statistics of these return series.

One can easily notice the drop in returns of all three portfolios recorded in September 2008, followed by increased volatility after 2009.

In terms of returns, the best portfolio was EMK (average return of 0.72%), followed by DMK-EMK (0.53%) and DMK (0.35%).

**Figure 4: Monthly returns for DMK, EMK and DMK-EMK portfolios, 2004-2013**



Source: Authors' calculations

In terms of returns, the best portfolio was EMK (average return of 0.72%), followed by DMK-EMK (0.53%) and DMK (0.35%). These portfolio's risks, on the other hand, lead to a number of observations: (i) DMK standard deviation (4.95%) is lower than the standard deviation of three of the markets included in this portfolio – Canada, France and United Kingdom, but higher than the standard deviations of the other three markets – United States and Japan; (ii) EMK standard deviation (8.04%) is lower than the standard deviations of all the five markets included in the portfolio; (iii) DMK-EMK standard deviation is lower than the standard deviation of six markets and higher than the standard deviation of the remaining four markets.

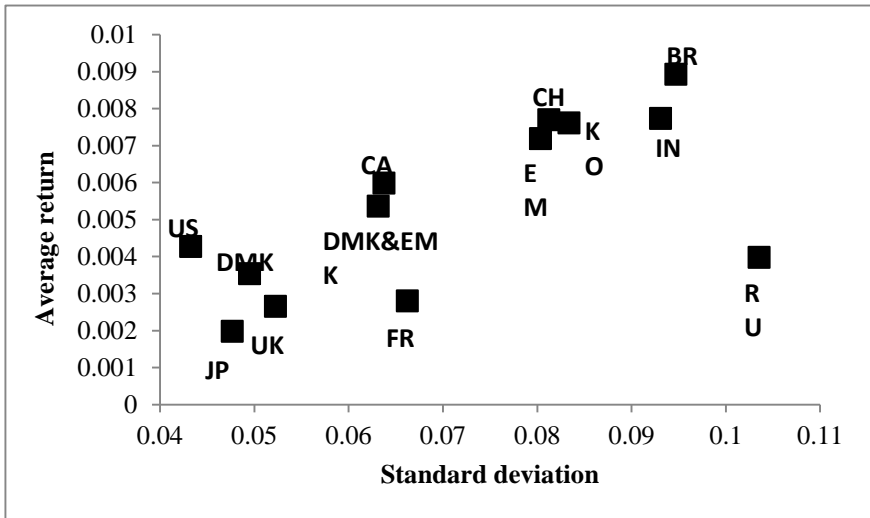
**Table 4: Descriptive statistics DMK, EMK and DMK-EMK portfolios, 2004-2013**

	RET_DMK	RET_EMK	RET_DMK_EMK
<b>Mean</b>	0.003539	0.007192	0.005365
<b>Median</b>	0.010060	0.012250	0.012990
<b>Maximum</b>	0.112380	0.193020	0.152700
<b>Minimum</b>	-0.226510	-0.344680	-0.285600
<b>Std. Dev.</b>	0.049508	0.080371	0.063148
<b>Skewness</b>	-1.183683	-0.885509	-1.082288
<b>Kurtosis</b>	6.470922	5.494193	6.269034
<b>Jarque-Bera</b>	87.52312	46.39763	76.21938
<b>Probability</b>	0.000000	0.000000	0.000000
<b>Observations</b>	119	119	119

Source: Authors' calculations

The plot of average returns versus standard deviations for all individual countries and the three portfolios is shown in Figure 5. As we can observe, the DMK portfolio is dominated by the US portfolio (the latter has a higher return and a lower standard deviation than the diversified portfolio of developed markets), but dominates only the British portfolio. On the other hand, the EM portfolio dominates only the Russian portfolio, while the DMK-EMK portfolio dominates the French and Russian portfolios. Of all three diversified portfolios, DMK-EMK portfolio provided investors with the highest return, but accompanied by the highest risk as well.

**Figure 5: Average return versus standard deviation, all portfolios**



Source: Authors' calculations

A proper understanding of these results cannot be done without taking a look at the correlations between countries' returns, the main contributor to the portfolio effect and diversification. Table 5 presents the correlations between the ten countries included in the analysis, using monthly logarithmic returns, for the period 2004-2013. A few observations are noteworthy: (1) correlations between all country pairs are highly positive, with a minimum value of 0.4948 (Japan and China) and a maximum value of 0.8579 (Canada and France); (2) the average correlation between developed markets was

0.7702, between emerging markets 0.7200, and the average correlation between all ten countries was 0.6962. These high correlation values are the main culprits for the above-mentioned results in terms of portfolio risk, as they have not managed to provide the investor with the needed diversification potential of emerging markets. At the same time, these high values should not come as a surprise, given at least two phenomena that characterised capital markets during the time frame of our analysis: capital markets integration, including emerging markets, and the two inter-twinned financial crises (the global financial crisis in 2007-2008 and the sovereign debt crisis in 2010-2012).

**Table 4: Correlations of monthly returns of MSCI indices, 2004-2013**

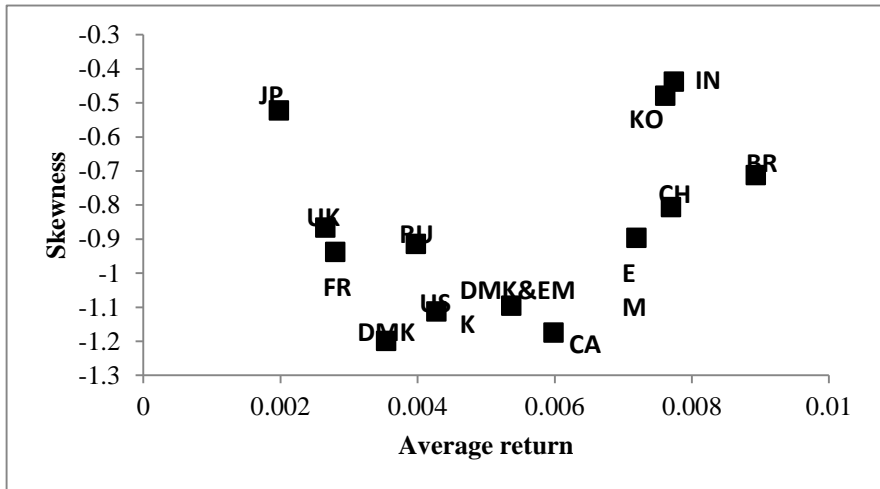
	RET_BR	RET_CA	RET_CH	RET_FR	RET_IN	RET_JP	RET_KO	RET_RU	RET_UK	RET_US
RET_BR	1.000000	0.857906	0.774145	0.719082	0.748443	0.595954	0.715024	0.818522	0.776498	0.683806
RET_CA	0.857906	1.000000	0.738534	0.782968	0.720637	0.622927	0.726324	0.801247	0.848957	0.811934
RET_CH	0.774145	0.738534	1.000000	0.690161	0.704945	0.494824	0.713400	0.656643	0.733861	0.639472
RET_FR	0.719082	0.782968	0.690161	1.000000	0.694767	0.647465	0.746803	0.727076	0.907706	0.873236
RET_IN	0.748443	0.720637	0.704945	0.694767	1.000000	0.584934	0.716711	0.641832	0.701569	0.687427
RET_JP	0.595954	0.622927	0.494824	0.647465	0.584934	1.000000	0.611292	0.620412	0.679286	0.653989
RET_KO	0.715024	0.726324	0.713400	0.746803	0.716711	0.611292	1.000000	0.710661	0.726447	0.753605
RET_RU	0.818522	0.801247	0.656643	0.727076	0.641832	0.620412	0.710661	1.000000	0.771754	0.671431
RET_UK	0.776498	0.848957	0.733861	0.907706	0.701569	0.679286	0.726447	0.771754	1.000000	0.874350
RET_US	0.683806	0.811934	0.639472	0.873236	0.687427	0.653989	0.753605	0.671431	0.874350	1.000000

Source: Authors' calculations

Figure 6 shows another perspective on the performances of these portfolios, this time in terms of average returns versus skewness. As mentioned before, all individual and composite portfolios had negative skewness, which means that the number of returns lower than the average return was higher than the number of better returns compared to the average. Again, this result should not be surprising, given the underperformances of these markets in crisis times, materialised in very low returns. When we scrutinize Figure 6, we observe that two emerging markets – India and South Korea – and one developed market – Japan – recorded a similar value of skewness (the lowest – closer to zero – from the entire sample of countries), while Canada was the market with the lowest skewness. Interestingly, the

three diversified portfolios have managed to increase the skewness that investors were exposed to, compared to holdings in individual markets: DMK portfolio has the highest negative skewness of all portfolios, DMK-EMK portfolio has the fourth highest negative value, while EMK portfolio has a higher negative skewness compared to its component countries. At the same time, it should be mentioned that bearing a higher skewness would have not necessarily provided investors with a reward in terms of higher returns – rather interesting, countries with lower negative skewness also offered investors better returns.

**Figure 6: Average return versus skewness, all portfolios**

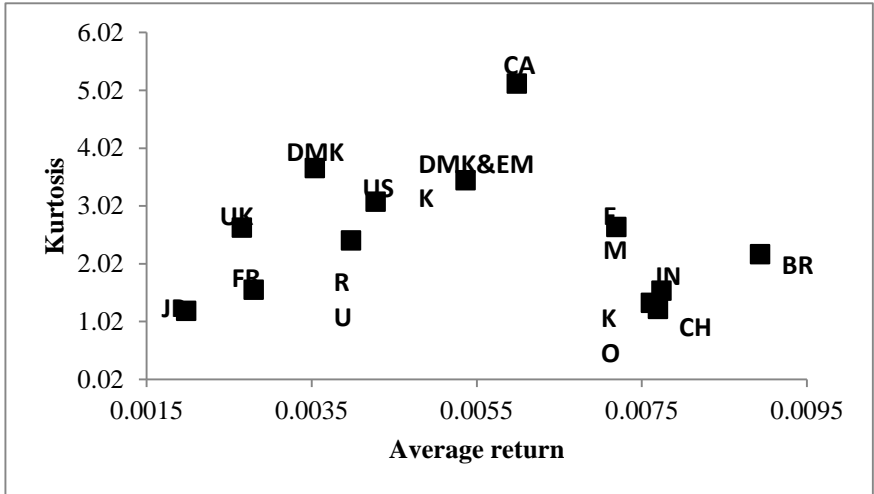


Source: Authors' calculations

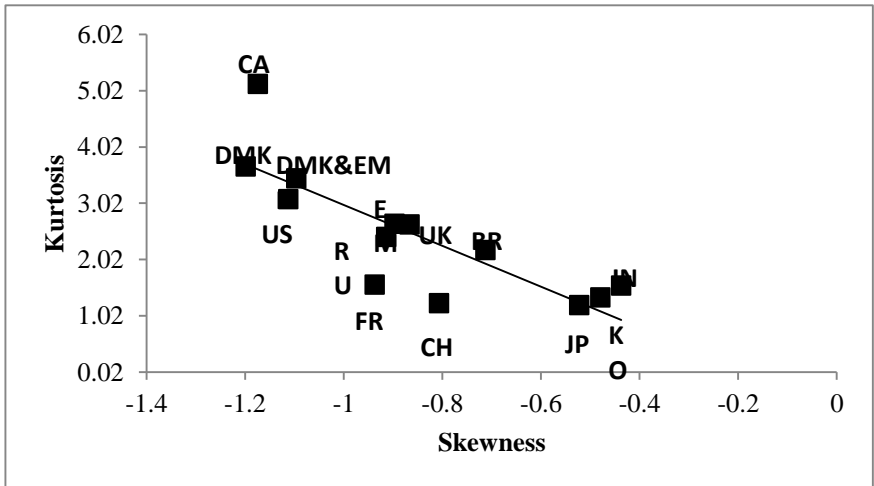
Let us now consider the return – kurtosis relationship for our portfolios, presented in Figure 7. The results indicate that diversified portfolios have augmented the individual portfolios kurtosis, except for Canada, thus accentuating the “fat tails” distributions found in the case of countries’ return series. This means that, at least from the point of view of exposure to extreme returns, an investor holding a diversified portfolio formed of the countries included in this analysis, would have not managed to diminish his exposure. As in the case of return – skewness relationship, it has to be

noted that exposure to higher kurtosis would not have offered investors better returns.

**Figure 7: Average return versus kurtosis, all portfolios**



**Figure 8: Skewness versus kurtosis, all portfolios**



Source: Authors' calculations

Figure 8 allows us to emphasize our previous result in terms of skewness and kurtosis: we observe that there is a negative relationship between skewness and kurtosis, as portfolios with higher kurtosis also provided investors, on average, a higher negative skewness. Interesting enough, the DMK portfolio is the one with the worse performance of all portfolios.

## **2. Conclusions**

Our paper investigated the diversification potential of emerging markets over ten years period, from 2004 and 2013, which also included two global inter-twinning crises. Given the process of financial integration at global level that included emerging markets and the underperformances of international capital markets during crisis times, we offer evidence on a diminishing contribution of emerging markets to international portfolio diversification in recent years. As correlations between emerging markets and developed markets remained at high levels during the period, their contribution was rather small in terms of risk diversification. Moreover, an investor that would have exposed himself to higher negative skewness – to mention that all countries displayed negative skewness of their returns during the time frame of our research – or kurtosis has not necessarily enjoyed better returns. Our results shed a new light into the diversification possibilities generated by investments in emerging markets and draw the attention over a new reality in capital markets, where emerging markets, particularly the most developed among them, began to borrow the attributes of developed markets' returns and somehow stop to represent powerful diversification tools for investments in developed markets.

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