

Returning to the Silk Road: *Should Global Portfolios Replace BRICS?*

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Investing in emerging markets has received considerable interest among academics and practitioners alike. With increased financial liberalization, technological advancements, and the development of financial innovation, emerging markets became accessible especially through passive allocations of respective major indexes (Bekaert and Harvey [2000]; Henry [2000]; Ozatay and Sak [2002]; Rakhmayil [2006]). As such, exchange-traded funds (ETFs) have witnessed remarkable growth in assets under management (AUM) over the past two decades (Petajisto [2017]). Bogle [2017] stated that ETFs now constitute half of the dollar value of trading U.S. stocks. Although significant research coverage is found confirming home bias, investors have allocated—and will continue to allocate—part of their portfolios internationally as long as evidence is found on enhancing the risk–return profile.¹ Consequently, allocations to emerging markets have gained further attention as diversification benefits are detected and idiosyncratic risk is mitigated.² Undoubtedly, the selection of emerging market allocations continues to grab the attention of global investors as market conditions and socioeconomic developments change. The dynamic structural shifts and rapid fluctuations of economies call for vigilance and continuous assessment. Therefore, it is crucial that academics and practitioners recognize the underlying

mechanisms of change and proceed with honest interpretation of investor sentiment and changing schemes. This article intends to undertake a broad review of emerging milestones after the global financial crisis and to investigate their significance in relation to global investment management.

ARE BRICS FALLING?

First, we undertake a review of Brazil, Russia, India, China, and South Africa (BRICS) after almost a decade of its official recognition by the respective governments of BRICS nations and attention from the investing public as a valid proxy for emerging markets allocation. Considerable research has since been conducted on the benefits of the globally recognized association and its economic/financial effects on the respective countries. The general consensus from the original BRICS association appears to have highlighted a benefit bias toward China and India and much less toward Brazil and Russia.³ Wu et al. [2013] investigated the trade among BRICS and found that the increase was mostly supporting Chinese exports. Moreover, the intratrade has witnessed a decline between Russia, India, and Brazil for the period 2001–2015. Vieira and Ouriques [2016] focused on Brazil in relation to BRICS and asserted the country's realignment with the United States, stating

that BRICS will soon “have no relevance to Brazil.” South Africa, on the other hand, seems to have an indifferent economic effect.⁴ Although the perceived similarity in stage of economic advancement was the original justification, the grouping was, and still is, questioned, with some describing the BRICS as a “loose club” (Cooper and Farooq [2013]) needing “time for a rethink” (Evenett [2015]). Because the group members do not share economic motivations (Cooper and Farooq [2017]), nor do they share political, cultural, and historical affiliations, conflicting views have emerged toward the political and economic significance of BRICS.

Given the asymmetric effects and conflicting opinions on and among the members, it is important to question and evaluate the sustainability of such an association. In financial markets, Narula [2016] investigated the volatility behavior of BRICS and found insignificant diversification benefits while confirming the impact that the global recession had on BRICS. The study suggested undertaking investment decisions by considering the respective individual stock markets. The question of grouping relevance in capital markets was further substantiated by Marszk [2015], Sivramkrishna [2016], and Singh and Singh [2017]. Hence, the logic of grouping the five markets from an investment perspective is evidently called into question. Furthermore, a major BRIC ETF has witnessed a 69% decline in primary outstanding shares over the past five years, indicating significant redemption, whereas non-BRIC emerging-market ETF share creation has witnessed double-digit growth rates.⁵ The aftermath of the global financial crisis and the respective BRICS performance have put investors in a bewildering position when identifying the proper emerging market allocation.⁶ This is reflected in the rise of the traditional broad-based emerging market indexes, which seems to be maintained until ambiguity subsides.⁷ Despite the current skepticism, Speidell [2017] argued that there are 22 emerging and frontier emerging markets worth considering.

Meanwhile, interesting endeavors have emerged by some members of the BRICS and others that call for the attention of the investing public. In 2016, China announced the Belt and Road Initiative (BRI), sometimes referred to as the *New Silk Road*, to boost trade, capital investment, and services between China and 65 other countries, collectively accounting for a third of the world’s gross domestic product (GDP) with investment estimates surpassing US\$1.7 trillion a

year through 2030.⁸ The anticipated investment will be directed to building the infrastructure toward connectivity through (1) the land-based Silk Road Economic Belt and (2) the Maritime Silk Road. As such, the Silk Road Fund and the New Development Bank have already committed US\$1.1 trillion. The anticipated developed corridors, both land and ocean based, signify the virtual regeneration of the historical Silk Road, established in the Han Dynasty (204 BC–24 AD) and connecting China, India, Persia, and Arabia, all the way to Ancient Rome–Constantinople (modern Turkey), for the trade of silk, among other goods, and connecting civilizations in philosophy, religion, architecture, music, and art. Furthermore, the countries that are linked by the New Silk Road—which actually takes two routes, one through land and the other by sea—have simultaneously begun a series of bilateral economic ties. The apparent collaborations, joint committees, investment commitments, and trade arrangements are further strengthened as a result of historical ties and mutual economic interests.⁹ The question, therefore, becomes, “Could these geopolitical and economic trends, evolving over the past five years, have direct implications for the global investor?”

To empirically and qualitatively investigate the possible re-emergence of emerging markets, an impartial assessment of economic and financial trends is required. Subsequently, it is argued that, if structural shifts of capital flows are anticipated, one needs to capture the formalization of imminent economic blocs and deploy appropriate investment strategies.¹⁰ Speidell and Krohne [2007] presented an overview of frontier emerging equity markets and emphasized the expected reward despite the apparent challenges arising from limitations in standard business practice and regulatory complexity. Resembling the Silk Road nations could partially serve strategic global portfolio allocations and allow potential long-term effects to be translated in the risk–return characteristics of such a portfolio.

Although the BRIC acronym was coined in 2001, the official summit of the governments reinforcing the reference took place eight years later. Conversely, it could be argued that the Silk Road nations possess a plausible justification to be tracked and possibly invested in as a cohesive economic bloc. The nations have demonstrated commitments, as reflected on multiple fronts, indicating that the reference to Silk Road nations is a result of events rather than the cause of those events.

SELECTING SILK ROAD MARKETS

To resemble the Silk Road nations, it is crucial that a methodological approach is undertaken to allow systematic tracking and monitoring of the portfolio. First, the selection should stem from the BRI's recently announced routes and inquire into the contributing/beneficiary nations. Second, the primary set of nations should reflect nations with existing investment accessibility as emerging markets for the global portfolio. Hence, the existence of tradable indexes listed in developed markets is the second prerequisite. Third, to ensure cohesiveness, evidence must be presented on the growing endogenous cross-trades between the selected nations. Lastly, a set of conditions must be placed to allow additions/deletions of markets to this investment basket.

Starting from the BRICS nations as the first wave, China, India, and Russia apparently partake in a direct link and meet the aforementioned conditions to various degrees. The second wave of nations meeting the aforementioned conditions includes Indonesia, Malaysia, the Gulf Cooperation Council (GCC), and Turkey. All four markets (1) are directly linked to one of the main Silk routes; (2) are represented by ETFs listed in developed markets (United States, United Kingdom, and Europe) with significant AUM; and (3) saw significant bilateral growth over the past five years in terms of trade and investment.¹¹ The GCC, although a block of six nations, is often looked at as one from an investment perspective.¹² The third wave of nations believed to constitute the watch list for potential addition are Egypt, Pakistan, Kazakhstan, Iran, Mongolia, Nepal, Sri Lanka, and Greece. For the purpose of investigating the current stance of the Silk Road, this article will focus on the first two waves of markets; henceforth, these will be referred to as *SILK*. However, given the weight and contribution of China and India in both BRICS and *SILK*, it is worthwhile to view *SILK* with and without these two countries. *SILK*, therefore, will take multiple versions to ensure multiple dimensions are viewed in the analysis.

Analyzing economic trends starts with reviewing economic indicators of the aforementioned countries. With emphasis placed on the era after the global financial crisis, Exhibit 1 presents major economic indicators of both BRICS and *SILK*. Economic indicators of output, standard of living, inflation, exports, market capitalization, FDI, and ease of doing business are presented. Starting with China and India as common denominators

and major contributors of both BRIC and *SILK*, it can be seen that both countries witnessed greater GDP growth than the other seven economies. This is also true for growth in standard of living as measured by the six-year growth rate in GDP per capita. China is the highest by far in terms of FDI, larger than all the other countries combined, and has the highest growth in market capitalization. On the other hand, India has witnessed a minor decline in its market capitalization over a span of six years. Proceeding with the remaining three nations of BRICS, it is clear that all witnessed a double-digit decline in output, along with a decline in market capitalization, with the exception of South Africa, recording a mere 3% increase.

On the other hand, *SILK* countries, beyond China and India, have all witnessed double-digit growth rates in GDP and standard of living, with the exception of the GCC. The GDP per capita of the GCC, Turkey, and Malaysia surpass that of the BRICS. Furthermore, continuing to exclude China and India as common denominators of both BRICS and *SILK*, economic indicators can be viewed in their aggregate form: on one hand, Brazil, Russia, and South Africa (BRS) and on the other, Indonesia, Malaysia, Turkey, and the GCC (*SILK*). Interestingly, these groups are comparable both in terms of aggregate GDP and in population. Nonetheless, it is evident that the *SILK* group does indeed outperform BRS in GDP growth, average GDP per capita, aggregate FDI, average percentage of exports to GDP, and market capitalization growth. The results of this preliminary set of indicators give obvious justification for the attention paid to the respective frontier markets in addition to reinforcing the long-term economic prospects foreseen by analysts.

ETF PERFORMANCE ANALYSIS

Proceeding to an analysis of ex post financial returns, the ETFs of the underlying markets for BRICS and *SILK* are used, with the exception of the GCC which is represented by the index. This is because most GCC ETFs were recently listed and therefore cannot be empirically investigated. Exhibit 2 presents the list of variables used in this article, along with the corresponding indexes. Developed markets are represented in this study by the United States, United Kingdom, and Europe, as reflected in three major market indexes. Data on all variables presented in this study are monthly returns spanning from October 2010 to October 2016.

EXHIBIT 1

Economic Indicators of Emerging Economies

	China	India	Russia	SA	Brazil	Indonesia
GDP (bn USD)	11,199	2,264	1,283	295	1,796	932
GDP Growth (%)	84	37	-16	-21	-19	23
GDP per Capita (USD)	8,123	1,709	8,748	5,274	8,650	3,570
GDP per Capita Growth (%)	78	27	-18	-28	-23	15
Export (% of GDP)	20	19	26	30	12	19
Inflation (%)	1.4	4.9	15.5	4.6	9.0	6.4
Population (mn)	1,379	1,324	147	56	208	261
Market Cap (bn USD)	7,321	1,567	622	951	759	426
Market Cap Growth (%)	82	-4	-35	3	-51	18
FDI (bn USD)	242	44	7	2	75	20
Start a Business (days)	29	26	10	43	80	25
	Malaysia	Turkey	GCC		BRS	SILK
GDP (bn USD)	296	858	1,370		3,374	3,456
GDP Growth (%)	16	11	21		-19	18
GDP per Capita (USD)	9,503	10,788	30,721		7,557	13,645
GDP per Capita Growth (%)	5	1	-9		-23	3
Export (% of GDP)	67	22	63		23	43
Inflation (%)	2.1	7.7	1.9		9.7	4.5
Population (mn)	31	80	54		411	426
Market Cap (bn USD)	360	172	910		2,332	1,868
Market Cap Growth (%)	-12	-43	27		-28	-3
FDI (bn USD)	11	18	14		83	62
Start a Business (days)	19	7	15		44	16

Notes: SILK in this exhibit is Indonesia, Malaysia, Turkey, and GCC. GDP figures are presented in USD billion, and population is presented in millions. GDP, GDP per capita, export, and population figures presented are for 2016. Inflation and FDI are from 2015. GDP Growth and Market Cap Growth are measured as the percentage change of the period (2010–2016). For GCC, BRS, and SILK, the outputs for the variables GDP, Population, Market Cap, and FDI were computed as the summation of the figures from the underlying countries. In addition, the variables GDP Growth, GDP per Capita, GDP per Capita Growth, Export, Inflation, Market Cap Growth, and Start a Business were computed as the arithmetic average of the underlying countries.

Source: The World Bank.

Stationarity of the time series has been checked, and all variables are confirmed to be integrated of order 1.

The initial performance analysis of respective markets starts with descriptive statistics and a correlation matrix of the variables in addition to the ETF performance as measured by returns and change in outstanding shares, all displayed in Exhibit 3. The first three rows present the cumulative returns of the respective ETFs. The exhibit presents the characteristics of both BRICS and SILK markets with the addition of the MSCI Emerging Markets ETF (EM) as a valid benchmark. Once again, China and India are highest among the markets both in terms of three- and five-year ETF performance and increase in AUM as measured by change in primary shares outstanding. Brazil and Russia

recorded negative performance in the three- and five-year returns, whereas South Africa maintained a positive return in the one- and five-year periods. Moving to SILK nations, Turkey and Malaysia witnessed negative returns in both three- and five-year periods, whereas Indonesia sustained positive returns across all three periods. However, all three markets witnessed positive returns in the past 12 months.

The results of ETF returns for both BRICS and SILK are best described as mixed. Nonetheless, when viewing demand for the respective ETFs over a five-year period, as measured by changes in outstanding shares, Brazil and Russia witnessed significant redemptions, whereas Indonesia almost doubled and Turkey registered a double-digit growth. Such dynamic changes clearly

EXHIBIT 2

Description of Variables

Abbreviation	Description	Index
U.S.	ETF	S&P 500
U.K.	ETF	FTSE 100
Europe	ETF	Euro Stoxx 50
China	ETF	MSCI China
India	ETF	Nifty 50
Brazil	ETF	MSCI Brazil 25/50
SA	ETF	MSCI South Africa
Russia	ETF	MSCI Russia ADR/GDR
Turkey	ETF	MSCI Turkey
Indonesia	ETF	MSCI Indonesia Investable
Malaysia	ETF	MSCI Malaysia
GCC	Index	S&P GCC Composite
BRIC	ETF	FTSE BRIC 50
EM	ETF	MSCI Emerging Markets

Sources: Reuters and BlackRock.

signify investor sentiment and subconscious dismantling of BRICS as viewed by investors. Investor perception is further reflected in the 209% increase in the broad emerging markets ETF. Although these results are limited because the ETF AUM presented are not exhaustive, the figures are representative of investor dynamics with respect to emerging markets.

Moving to the correlation matrix, the results present high correlations among Brazil, Russia, and South Africa. However, China and India record a relatively low correlation. Although China has low correlations with all markets under investigation, India presently has relatively higher figures with the remaining markets. Among the markets, the highest correlation is found between South Africa and Brazil, and the lowest is found between China and Indonesia. Overall, the preliminary descriptive statistics and ETF performance provide tentative implications for investment trends and mixed results from both groups. It remains clear, however, that China and India dominate investor preference with regard to emerging market allocation.

CONSTRUCTING SILK PORTFOLIOS

To capture the dynamics of ex-post SILK performance and differentiate between the first wave and second wave markets, four portfolios/investment baskets are constructed. As evidenced from earlier exhibits on

EXHIBIT 3

Descriptive Statistics and Correlation Matrix

Panel A: Descriptive Statistics

	China	India	Brazil	Russia	SA
1-Year (%)	31	20	15	13	8
3-Year (%)	24	17	-24	-14	-5
5-Year (%)	50	61	-25	-18	7
Shares Outstanding (%)	411	176	-45	-32	-4
Mean (%)	0.45	0.24	-0.27	-0.37	0.19
Median (%)	0.45	0.51	-0.5	-0.45	0.19
Std. Dev. (%)	7.14	7.02	9.17	8.38	6.37
Skewness	0.05	0.31	0.54	0.14	0.05
Kurtosis	4.52	3.39	3.74	3.76	2.97

	GCC	Indonesia	Malaysia	Turkey	EM
1-Year (%)	NA	14	2	21	24
3-Year (%)	NA	6	-25	-19	6
5-Year (%)	NA	3	-9	-9	21
Shares Outstanding (%)	NA	95	-17	15	209
Mean (%)	-0.04	0.19	0.03	-0.39	0.04
Median (%)	0.07	0.65	0.6	-0.82	-0.21
Std. Dev. (%)	4.45	6.25	4.49	8.23	5.13
Skewness	-0.51	-0.33	-0.24	0.23	0.02
Kurtosis	3	2.97	4.61	2.54	3.7

Panel B: Correlation Matrix

	China	India	Brazil	Russia	SA
China	1.00				
India	0.21	1.00			
Brazil	0.33	0.54	1.00		
Russia	0.20	0.45	0.67	1.00	
SA	0.29	0.57	0.78	0.60	1.00
GCC	0.19	0.28	0.42	0.30	0.30
Indonesia	0.17	0.49	0.45	0.27	0.47
Malaysia	0.24	0.52	0.71	0.58	0.61
Turkey	0.22	0.60	0.54	0.31	0.54
EM	0.46	0.73	0.86	0.74	0.82

	GCC	Indonesia	Malaysia	Turkey	EM
GCC	1.00				
Indonesia	0.19	1.00			
Malaysia	0.44	0.55	1.00		
Turkey	0.23	0.46	0.47	1.00	
EM	0.43	0.54	0.77	0.59	1.00

Notes: The variables 1-Year, 3-Year, and 5-Year denote the cumulative return in percentage terms as of August 2, 2017. Shares Outstanding variable is measured as the five-year percentage change of ETF shares outstanding. The remaining descriptive statistics and correlation matrix are based on monthly returns for the period October 2010 to October 2016.

Sources: Reuters and BlackRock.

NA = not applicable.

EXHIBIT 4

Description of SILK Portfolios

Portfolio	SILK	SILK-X	SILK-G	SILK-Q
Markets	Indonesia	Indonesia	Indonesia	Indonesia
	Malaysia	Malaysia	Malaysia	Malaysia
	Turkey	Turkey	Turkey	Turkey
	GCC	GCC	GCC	GCC
		Russia	Russia	Russia
		India	India	India
		China	China	China
Weighting	Equal	GDP	GDP	Equal
Rebalance	Fixed	Annual	Annual	Fixed

Notes: The exhibit presents the underlying markets of the hypothetical SILK portfolios. SILK and SILK-Q portfolios are equally weighted among the underlying markets. SILK-X and SILK-G are weighted based on the underlying markets' GDP weight. The weights are based on the previous year's GDP and are rebalanced at the beginning of each year.

Sources: Reuters and BlackRock.

the influence of China and India on both BRICS and SILK and to effectively compare the two groups, the first investment basket (SILK) comprises the four non-BRICS markets: Indonesia, Malaysia, Turkey, and the GCC. The second basket, SILK-X (i.e., SILK ex-China), incorporates Russia and India. The third and fourth baskets both incorporate China with two different weightings: One, SILK-G, is weighted based on the respective GDPs of markets; the other, SILK-Q, is equally weighted. For GDP-based weightings, the weights of respective markets are adjusted annually based on the previous year's GDPs. For consistency, a global portfolio is now envisaged and proxied by three main ETFs representing the United States, United Kingdom, and Europe, whereas emerging market blocs will be represented by BRIC ETF and the four constructed SILK baskets. Exhibit 4 displays a summary description of the SILK baskets and the underlying markets in each portfolio. Exhibit 5 presents the

EXHIBIT 5

Descriptive Statistics and Correlation Matrix—Global Portfolio Variables

	U.S.	U.K.	Europe	BRIC	SILK	SILK-X	SILK-G	SILK-Q
Panel A: Descriptive Statistics								
1-Year (%)	18	14	19	25	NA	NA	NA	NA
3-Year (%)	32	23	22	4	NA	NA	NA	NA
5-Year (%)	97	56	75	18	NA	NA	NA	NA
Shares Outstanding (%)	122	210	19	-69	NA	NA	NA	NA
Mean (%)	0.01	0.01	0.01	-0.06	-0.05	-0.16	-0.01	0.00
Median (%)	0.01	0.01	0.01	0.00	0.12	-0.13	0.32	0.01
Std. Dev. (%)	0.03	0.03	0.05	6.12	4.36	4.74	4.93	4.35
Skewness	0.01	-0.24	-0.43	0.05	-0.32	-0.14	-0.52	-0.16
Kurtosis	3.48	3.06	3.01	3.84	2.73	3.00	4.17	2.88
Panel B: Correlation Matrix								
U.S.	1.00							
U.K.	0.80	1.00						
EUROPE	0.75	0.75	1.00					
BRIC	0.71	0.65	0.54	1.00				
SILK	0.60	0.62	0.48	0.71	1.00			
SILK-X	0.71	0.67	0.60	0.86	0.85	1.00		
SILK-G	0.57	0.51	0.50	0.77	0.57	0.67	1.00	
SILK-Q	0.72	0.69	0.60	0.89	0.91	0.94	0.79	1.00

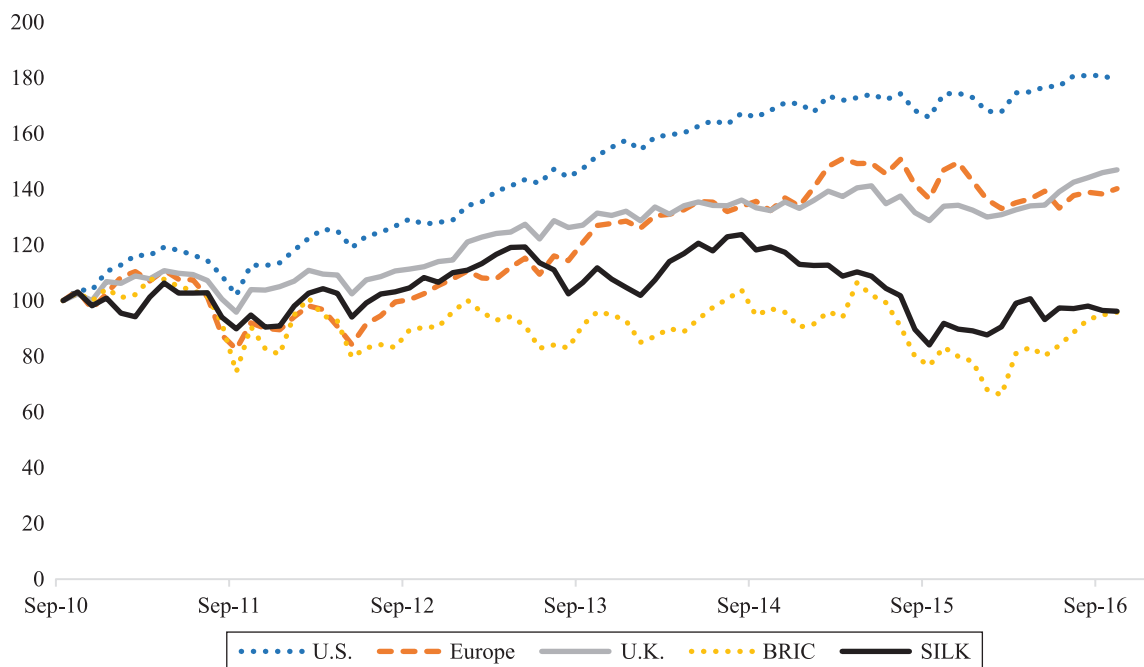
Notes: The variables 1-Year, 3-Year, and 5-Year denote the cumulative return in percentage terms as of August 2, 2017. The Shares Outstanding variable is measured as the five-year percentage change in ETF shares outstanding. The remaining descriptive statistics and correlation matrix are based on monthly returns for the period October 2010 to October 2016.

Sources: Reuters, BlackRock.

NA = not applicable.

EXHIBIT 6

Performance of Global Portfolio Variables (rebased at 100)



Sources: Reuters, BlackRock.

descriptive statistics and ETF performance of the underlying variables of the global portfolio and the correlation matrix of the respective variables. For ETF performance, it is important to point out the significant decline in the number of outstanding shares in BRIC ETF (-69%). The exhibit represents the largest proportion of redemption compared to the underlying markets. Notably, although the BRIC ETF is dominated by China (above 60%), investors have chosen to redeem BRIC ETF shares in the same time period in which the China ETF witnessed fourfold growth in demand.

Moreover, the SILK baskets have lower correlations with developed markets as compared to BRIC. Understandably, the three other portfolios began to encompass higher correlations as the three markets from BRIC were added. To visualize performance and volatility across the period under investigation, Exhibit 6 presents the cumulative performance of the global portfolio with both SILK and BRIC representing emerging markets.

Exhibit 7 highlights the volatility of emerging markets as represented by SILK, BRIC, and EM.

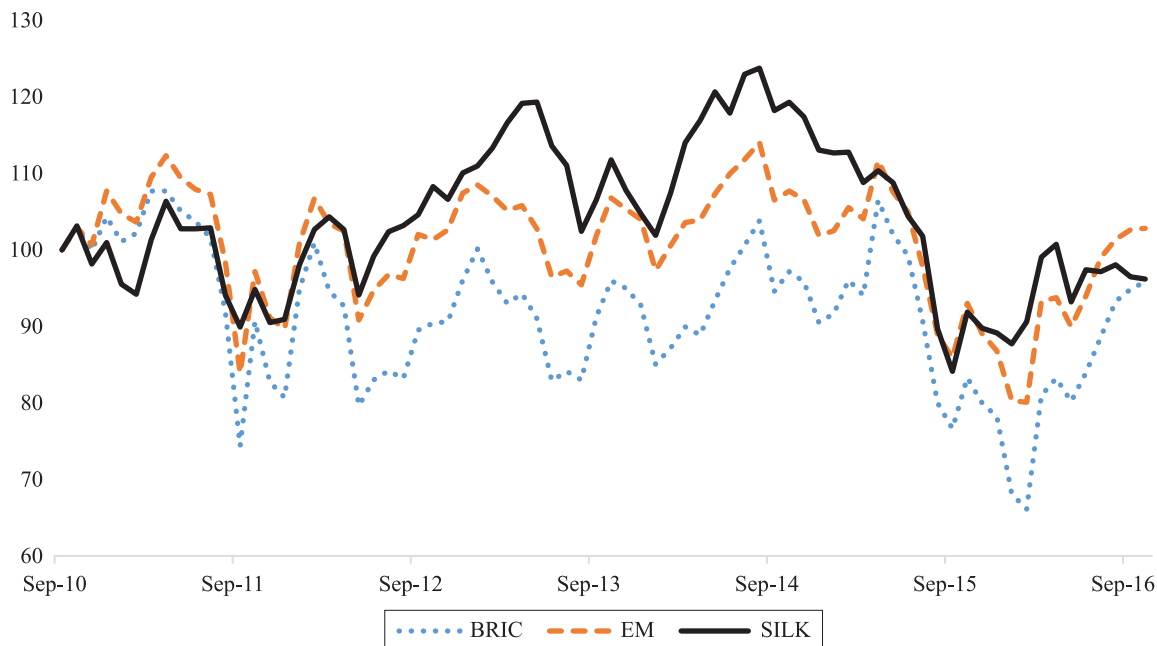
The SILK portfolio seems to outperform the other two emerging markets portfolios for most of the duration under investigation. Exhibit 8 investigates the volatility differential of the four constructed SILK portfolios. It can be seen that incorporating China in two portfolios resulted in an inverse trend relative to the two ex-China portfolios; SILK-G witnessed an uptrend from August 2014 to May 2015, whereas the other SILK baskets were in a downtrend. The exhibit indicates fluctuation differences between the SILK baskets that are worthy of further investigation.

TESTING CAUSALITY

In this section, Granger causality tests are applied between developed and emerging markets. The developed markets are represented by the United States, United Kingdom, and Europe, and emerging markets are represented by EM, BRIC, and the four SILK portfolios. Exhibit 9 reports the F -values. First, the results reveal statistically significant bidirectional causality between SILK and all three developed markets,

EXHIBIT 7

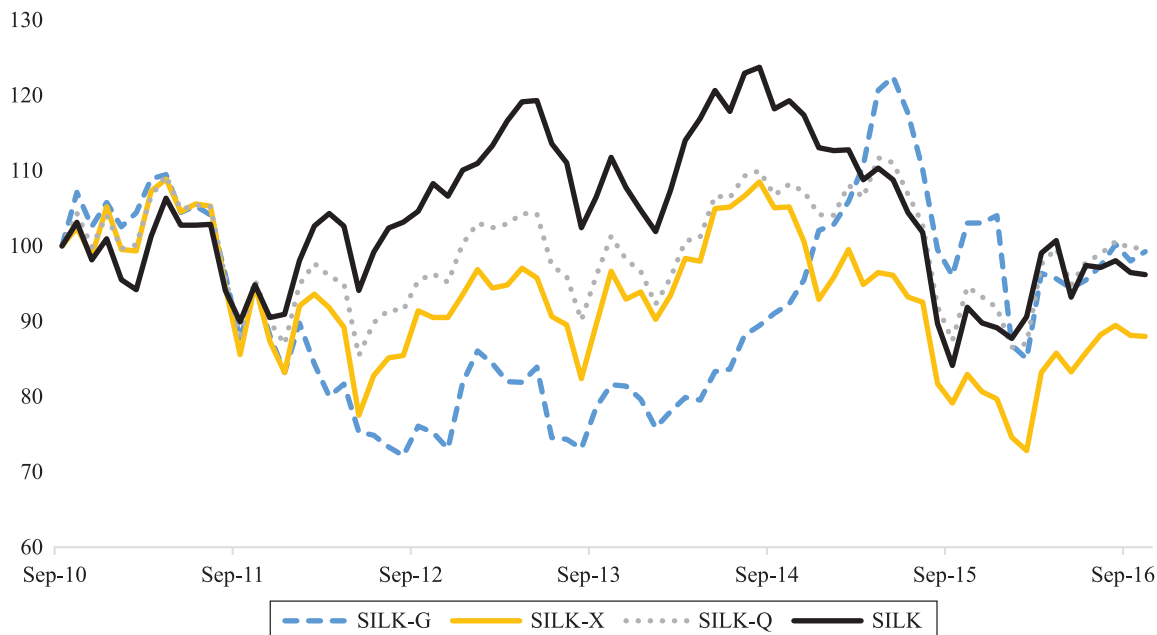
Performance of Emerging Market Indicators (rebased at 100)



Sources: Reuters, BlackRock.

EXHIBIT 8

Performance of SILK Portfolios (rebased at 100)



Sources: Reuters, BlackRock.

EXHIBIT 9

Results of Granger Causality Tests on Developed and Emerging Markets

Lags	1	2	3
	F-Value	F-Value	F-Value
BRIC → U.S.	1.25	0.67	0.50
U.S. → BRIC	2.56***	1.13	0.73
BRIC → U.K.	3.96***	2.51***	1.98***
U.K. → BRIC	0.18	0.82	1.28
BRIC → EUROPE	0.65	0.87	0.79
EUROPE → BRIC	1.01	0.71	0.74
EM → BRIC	0.08	0.07	0.36
BRIC → EM	0.06	0.02	0.40
SILK → BRIC	0.25	1.30	1.04
BRIC → SILK	0.24	0.15	0.09
SILK → U.S.	4.51***	3.99***	3.32***
U.S. → SILK	5.01***	2.09***	1.68**
SILK → U.K.	2.97***	5.25***	4.21***
U.K. → SILK	5.02***	4.24***	3.74***
SILK → EUROPE	0.48	2.38***	1.97***
EUROPE → SILK	1.61**	0.81	0.39
SILK → EM	0.68	1.93***	1.67**
EM → SILK	0.34	0.20	0.17
SILK-G → U.S.	0.10	0.24	0.37
U.S. → SILK-G	1.14	0.76	0.61
SILK-G → U.K.	0.91	0.66	0.82
U.K. → SILK-G	0.16	0.57	0.47
SILK-G → EUROPE	0.00	0.15	0.23
EUROPE → SILK-G	0.72	0.49	0.56
SILK-G → EM	0.00	1.87***	1.81***
EM → SILK-G	0.27	0.60	0.47
SILK-G → BRIC	0.43	2.51***	2.13
BRIC → SILK-G	0.29	0.46	0.38

Notes: The arrow indicates the direction of causality. The results are based on monthly returns for the period October 2010 to October 2016.

** significant at the 5% level.

*** significant at the 1% level.

indicating a feedback relation. Second, unidirectional causality is found from BRIC to the United Kingdom and from the United States to BRIC. Third, unidirectional causality between emerging markets is found from SILK-Q to EM and from SILK-Q to BRIC. The implications of the findings support the importance of SILK nations in relation to major developed markets and their impact on emerging markets as represented by the SILK-Q basket.

INTERNATIONAL DIVERSIFICATION BENEFITS

In this section, a hedging approach proposed by Moosa, Tawadros, and Hallahan [2015] is undertaken to examine the effect of BRIC and SILK interchangeably on a global all-equity portfolio as represented by the three major developed markets. Hedging effectiveness is essentially measured by reduction in the variance of an unhedged (domestic) asset in addition to one or more foreign assets. Calculating hedge ratios when constructing portfolios is conducted by minimizing the variance of the rate of return on the hedged position (the portfolio). Hence, a two-asset portfolio, R_p , is defined as

$$R_p = R_d - hR_f \quad (1)$$

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. The variance, therefore, for the portfolio rate of return, σ_p^2 , is represented as

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

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

$$\frac{\partial(\sigma_p^2)}{\partial h} = 2\sigma_d^2 h - 2\sigma_{d,f} = 0 \quad (3)$$

Therefore,

$$h = \frac{\sigma_{d,p}^2}{\sigma_f^2} \quad (4)$$

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

$$H_0 : \sigma_d^2 = \sigma_p^2 \quad (5)$$

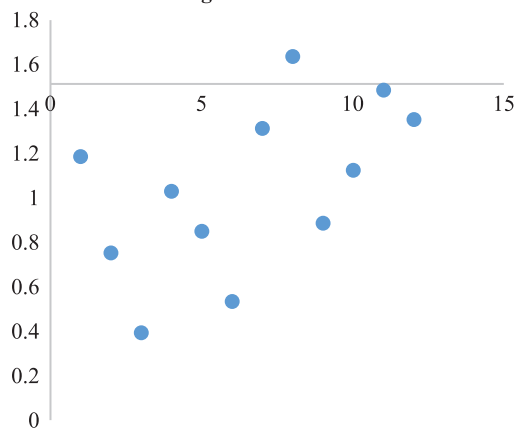
If the value of σ_d^2 is larger than σ_p^2 , the null hypothesis is rejected, implying that diversification is effective in reducing risk; that is, if

$$VR = \frac{\sigma_d^2}{\sigma_p^2} > F(n-1, n-1) \quad (6)$$

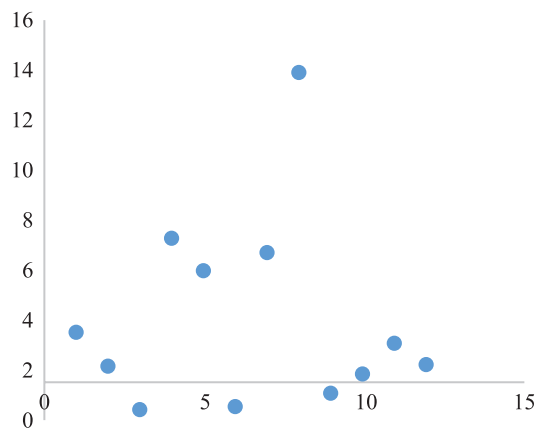
EXHIBIT 10

Variance Ratios with Critical Values

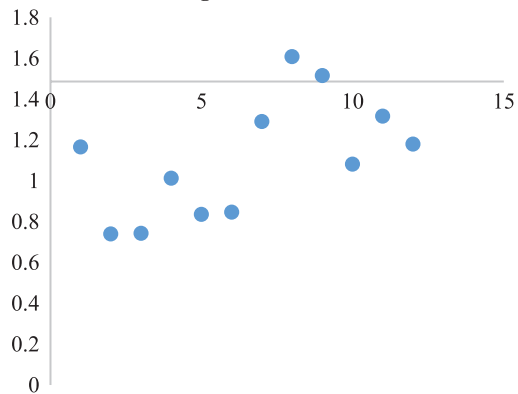
Panel A: BRIC Long



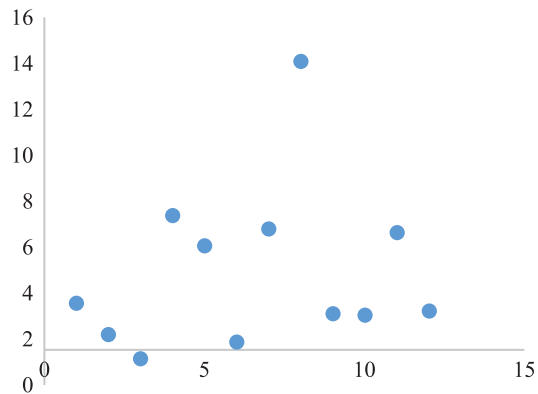
Panel B: BRIC Short



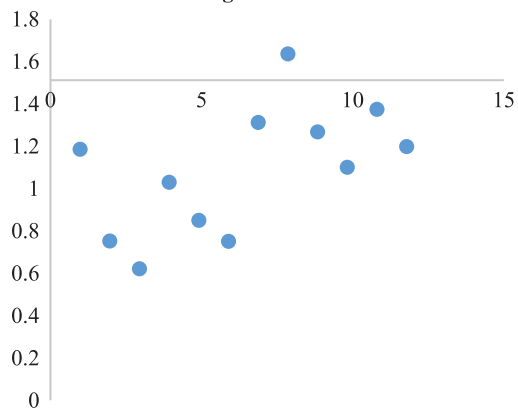
Panel C: SILK Long



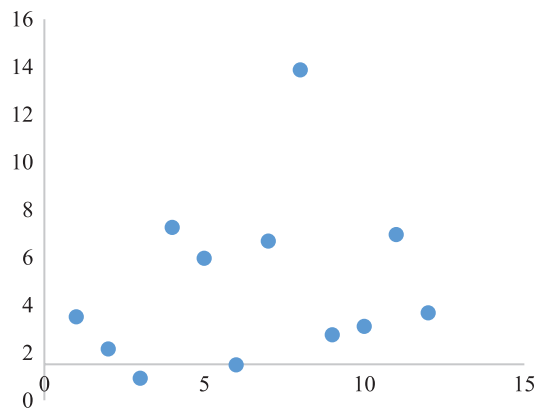
Panel D: SILK Short



Panel E: SILK-X Long

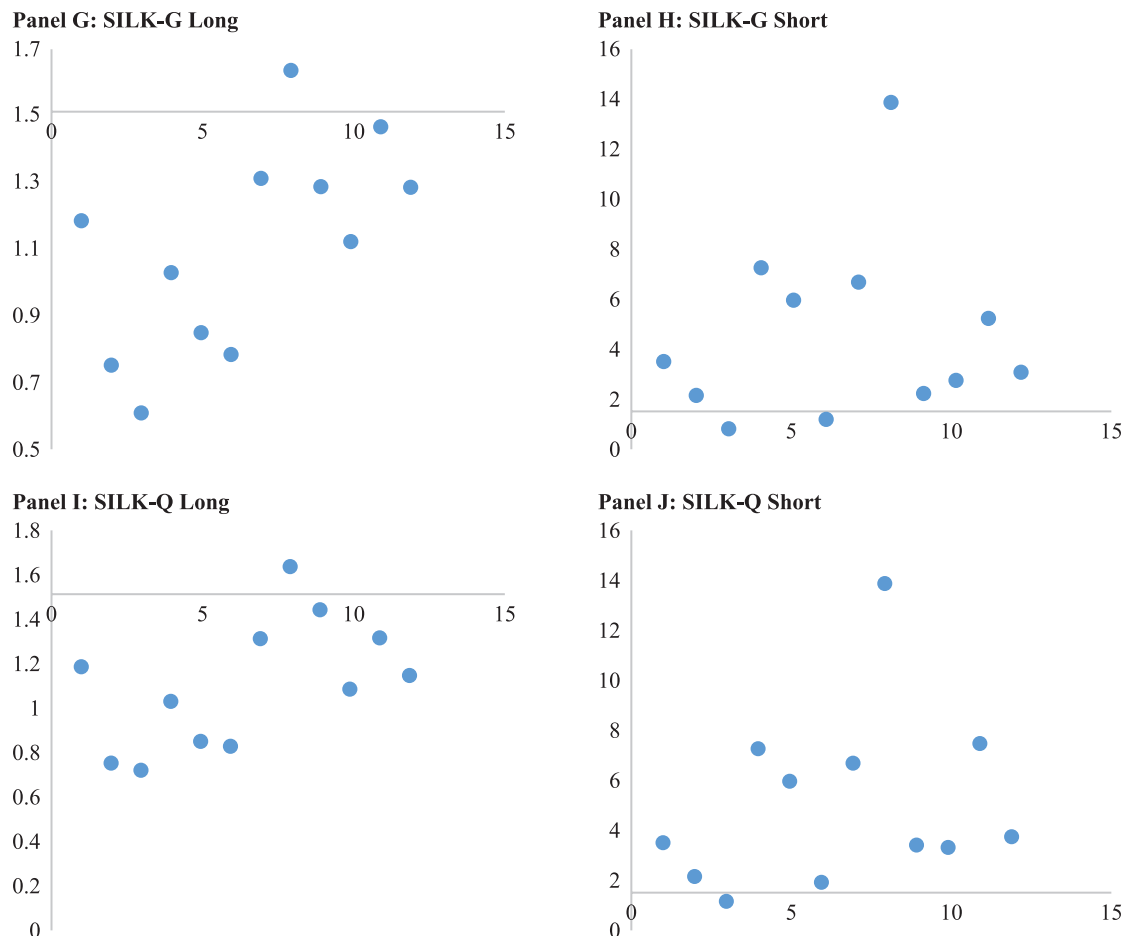


Panel F: SILK-X Short



(continued)

EXHIBIT 10 (continued)
Variance Ratios with Critical Values



Notes: The horizontal line represents the 5% critical value of the F distribution with 64 degrees of freedom (1.513). Each dot represents a portfolio. A dot above the line indicates effective diversification (and vice versa). The panel labels indicate the emerging market/investment basket employed in the global portfolio and the portfolio position. Long indicates similar positions, and Short indicates opposite positions. The results are based on monthly returns for the period January 2011 to April 2016.

in which VR is the variance ratio and n is the sample size. The test is further complemented by calculating the variance reduction VD as

$$VD = 1 - \frac{1}{VR} = 1 - \frac{\sigma_p^2}{\sigma_d^2} = \frac{\sigma^2(R_d - hR_f)}{\sigma^2 R_d} \quad (7)$$

The two-asset portfolios are constructed with several conditions. Each portfolio must contain one developed asset and one emerging asset. Both developed and emerging assets will take (1) the domestic position and (2) the foreign position. Lastly, each portfolio will be tested with similar positions (long–long) and with

opposite positions (long–short). Because ETFs are tested and shorting positions can be taken, it is assumed that the SILK investment baskets will have similar characteristics. The two-asset portfolio analysis can obviously be replaced with multiasset portfolios. However, analysis of the two-asset portfolios will be maintained for two reasons. First, it is important at this stage to investigate bivariate relations between developed and emerging markets/portfolios. Understanding how each market contributes to the portfolio of the other can provide important implications for investors on both spectrums, developed and emerging. It can also be argued that the home bias phenomenon, as evidenced by the literature,

would entail portfolio concentration. Nevertheless, a particular interest of this study is to quantify the effects of each developed market in relation to SILK versus BRIC. Second, although two-asset portfolios are constructed, the assets investigated in this study emulate regions and involve multiple markets, indicating sufficient embodiment of assets in one portfolio.

Exhibit 10 displays the variance ratios for 120 portfolios distributed by emerging market (BRIC or SILK) and position (similar or opposite). The horizontal line represents the 5% critical value of the F distribution. Each dot represents a portfolio; a dot above the line indicates effective diversification (and vice versa). Out of the portfolios of similar positions, 10% produce effective diversification as represented by VR statistical significance. Nonetheless, 90% of portfolios produce effective diversification when opposite positions are taken. SILK portfolios produced more effective diversification with developed markets than BRIC (90% versus 75%).

Furthermore, Exhibits 11 and 12 report the results of variance reduction (VD) for the developed/emerging portfolios. The maximum portfolio reduction is found in the portfolios containing SILK baskets and the United Kingdom, followed closely by portfolios containing SILK baskets and the two other developed markets, Europe and the United States, respectively. It is also worth noting that the average positive variance reduction of portfolios containing BRIC and developed markets is 44%, whereas the four SILK baskets recorded average risk reductions of 43%, 53%, 57%, and 60%. It is not surprising that the lowest risk reduction of SILK baskets is found in SILK-G, which closely resembles the characteristics of BRIC, because both portray China as the largest contributor. Interestingly, when the weight of the underlying SILK markets is controlled, as represented by the equal weighting, SILK-Q produces the highest average risk reduction. Overall, the results of this investigation provide clear evidence that SILK investment baskets are superior to BRIC in risk reduction of portfolios containing developed markets, hence producing more effective diversification.

CONCLUDING REMARKS

This study is based on the hypothesis that emerging markets can be better represented by an alternative economic bloc than by the famed BRICS. Motivated by socioeconomic indications signaling the drift of

EXHIBIT 11

Variance Reduction—Similar Position (long-long) Portfolios

Domestic	Foreign	σ_d^2	σ_f^2	VR	VD
Panel A: BRIC					
U.S.	BRIC	11.78	40.99	0.39	-1.55
U.K.	BRIC	10.38	40.99	0.53	-0.87
Europe	BRIC	22.43	40.99	0.89	-0.13
BRIC	U.S.	40.99	11.78	1.12	0.11
BRIC	U.K.	40.99	10.38	1.48	0.33
BRIC	Europe	40.99	22.43	1.35	0.26
Panel B: SILK					
U.S.	SILK	11.78	19.83	0.76	-0.32
U.K.	SILK	10.38	19.83	0.86	-0.16
Europe	SILK	22.43	19.83	1.54	0.35
SILK	U.S.	19.83	11.78	1.10	0.09
SILK	U.K.	19.83	10.38	1.34	0.25
SILK	Europe	19.83	22.43	1.20	0.17
Panel C: SILK-X					
U.S.	SILK-X	11.78	24.29	0.62	-0.61
U.K.	SILK-X	10.38	24.29	0.75	-0.33
Europe	SILK-X	22.43	24.29	1.27	0.21
SILK-X	U.S.	24.29	11.78	1.10	0.09
SILK-X	U.K.	24.29	10.38	1.37	0.27
SILK-X	Europe	24.29	22.43	1.20	0.17
Panel D: SILK-G					
U.S.	SILK-G	11.78	26.11	0.61	-0.64
U.K.	SILK-G	10.38	26.11	0.78	-0.28
Europe	SILK-G	22.43	26.11	1.29	0.22
SILK-G	U.S.	26.11	11.78	1.12	0.11
SILK-G	U.K.	26.11	10.38	1.47	0.32
SILK-G	Europe	26.11	22.43	1.29	0.22
Panel E: SILK-Q					
U.S.	SILK-Q	11.78	20.10	0.72	-0.39
U.K.	SILK-Q	10.38	20.10	0.83	-0.21
Europe	SILK-Q	22.43	20.10	1.44	0.31
SILK-Q	U.S.	20.10	11.78	1.08	0.08
SILK-Q	U.K.	20.10	10.38	1.32	0.24
SILK-Q	Europe	20.10	22.43	1.15	0.13

Note: The results are based on monthly returns for the period January 2011 to April 2016.

VR = variance ratio, VD = variance reduction.

economic motivations toward strategic cohesion for collaboration, it has arguably become clear that an alternative bloc reflecting the upcoming long-term trend is imminent. The grouping of SILK nations could indeed provoke controversial opinions within the investment community; therefore, it must be noted that

EXHIBIT 12

Variance Reduction—Opposite Position (long–short) Portfolios

Domestic	Foreign	σ_d^2	σ_f^2	VR	VD
Panel A: BRIC					
U.S.	BRIC	11.78	40.99	0.42	-1.41
U.K.	BRIC	10.38	40.99	0.54	-0.86
Europe	BRIC	22.43	40.99	1.07	0.07
BRIC	U.S.	40.99	11.78	1.84	0.46
BRIC	U.K.	40.99	10.38	3.06	0.67
BRIC	Europe	40.99	22.43	2.21	0.55
Panel B: SILK					
U.S.	SILK	11.78	19.83	1.12	0.11
U.K.	SILK	10.38	19.83	1.83	0.45
Europe	SILK	22.43	19.83	3.05	0.67
SILK	U.S.	19.83	11.78	2.99	0.67
SILK	U.K.	19.83	10.38	6.53	0.85
SILK	Europe	19.83	22.43	3.17	0.68
Panel C: SILK-X					
U.S.	SILK-X	11.78	24.29	0.92	-0.09
U.K.	SILK-X	10.38	24.29	1.48	0.33
Europe	SILK-X	22.43	24.29	2.74	0.64
SILK-X	U.S.	24.29	11.78	3.10	0.68
SILK-X	U.K.	24.29	10.38	6.95	0.86
SILK-X	Europe	24.29	22.43	3.67	0.73
Panel D: SILK-G					
U.S.	SILK-G	11.78	26.11	0.81	-0.24
U.K.	SILK-G	10.38	26.11	1.19	0.16
Europe	SILK-G	22.43	26.11	2.22	0.55
SILK-G	U.S.	26.11	11.78	2.75	0.64
SILK-G	U.K.	26.11	10.38	5.23	0.81
SILK-G	Europe	26.11	22.43	3.07	0.67
Panel E: SILK-Q					
U.S.	SILK-Q	11.78	20.10	1.15	0.13
U.K.	SILK-Q	10.38	20.10	1.92	0.48
Europe	SILK-Q	22.43	20.10	3.41	0.71
SILK-Q	U.S.	20.10	11.78	3.31	0.70
SILK-Q	U.K.	20.10	10.38	7.47	0.87
SILK-Q	Europe	20.10	22.43	3.74	0.73

Note: The results are based on monthly returns for the period January 2011 to April 2016.

VR = variance ratio, VD = variance reduction.

it is intended to set an example rather than a standard for future grouping of emerging and frontier markets. The basic objective here is to induce interest among practitioners and scholars in re-examining our definitions of emerging market blocs. It may well be that BRICS could still maintain interest among the investing

public; therefore, there is no reason why future groups cannot be tracked and continuously benchmarked adjacently. Of course, the investigation was not conducted without limitations, and further developments in future studies by academics and practitioners are anticipated. Examining markets representing other frontier blocs and constructing baskets with weights based on market capitalization or fundamental factors in addition to versions of social/ethical screening standards and various approaches of active management styles are encouraged.¹³

Nevertheless, the qualitative and empirical analysis set out in this article postulate a plausible justification for considering alternative economics blocs in global asset allocation. Despite the eminent significance of China and India within any emerging market allocation, it is crucial that the investment community set solid strategic directions and place structured criteria on what is progressively growing in importance for future capital flows. Inevitably, index providers are called upon to catalyze an independent set of measures in grouping and tracking markets of cohesion and potential. Accordingly, only time can provide the proof of traction and investment demand as reflected by investors and conducted by active and passive fund managers.

ENDNOTES

¹See French and Poterba [1991], Cooper and Kaplanis [1994], Werner and Tesar [1997], Grinold and Meese [2000], and Gerke, Mager, and Rohrs [2005] for studies on home bias in international portfolios.

²Errunza [1994] generalized findings on the risk–return characteristics between developed and emerging markets, pointing out that domestic systematic risk has been higher in developed markets whereas correlations with emerging markets has been low. Nonetheless, Brennan and Cao [1997] showed that, despite domestic investors' information advantage, foreign investors will continue to invest when foreign assets attain higher returns. Li, Sarkar, and Wang [2003] examined international diversification into emerging markets by taking a U.S. investor and found that benefits remain even with portfolio constraints such as short-selling restrictions.

³Sridharan, Vijayakumar, and Rao [2009] investigated the causal relationship between foreign direct investment (FDI) and growth of BRICS and found that FDI leads growth unidirectionally for India and China only.

⁴Chkili and Nguyen [2014] investigated the effects of stock returns on exchange rate movements in BRICS and found statistical significance for all countries except for South Africa. Sandrey [2013, p. 95] focused on South Africa's position

in the BRICS association and concluded that South Africa “does not measure up in term of trade levels” and suggested that BRIC association “is not where South Africa belongs.” Carmody [2012] implied that South Africa’s role in BRICS seems to be serving as a regional conduit for transnational capital increasingly benefiting China. Petropoulos [2015] suggested the inclusion of South Africa can be explained when incorporating the political dimension because it can be viewed as the representative of sub-Saharan Africa.

⁵The calculation is based on a five-year change in the number of outstanding shares of BRIC ETF (ETF code: BRIC) as of August 2, 2017.

⁶Delcoure and Singh [2016] confirmed that the structure of linkages between developed and emerging markets has changed after the global financial crisis.

⁷As investors redeemed primary shares of BRIC ETF, the MSCI emerging ETF (Code: SEMA) witnessed 209% growth in shares outstanding.

⁸Fallon [2015] described the strategic ambitions of the New Silk Road strategy. (See also <http://www.business.hsbc.com/belt-and-road?cid=HBEU:Gr:P1:XX:01:1707:001:bri2017#>.)

⁹See, for example, Pethiyagoda [2017].

¹⁰Froot, O’Connell, and Seasholes [2001] examined flows into and out of 44 countries. The study found that flows possess a positive predictive power for future equity returns.

¹¹See Maierbrugger [2015] on GCC–Indonesian trade relations, Novela [2016] on Indonesia–Malaysia intertrade, Pethiyagoda [2017] on India–GCC, and Singh [2016] on India–China–Russia trade relations.

¹²With the majority of market capitalization weighted toward Saudi Arabia and the United Arab Emirates (U.A.E.), all six markets have been proven, since the GCC’s inception in 1981, to act as one block, as evidenced by high correlations, unified foreign policy, and trade agreements among the countries. Despite the recent political turbulence among the countries, the possible adverse impact of treating the six nations as one economic bloc is minimal.

¹³Speidell [2016] presented a compelling argument on active investment management producing benefits despite constraints surrounding passive investors in frontier markets.

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