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A STUDY OF AFRICAN STOCK EXCHANGES AND THEIR CORRELATION
BETWEEN EXCHANGES IN THE DEVELOPED WORLD AS IT RELATES TO
PORTFOLIO DIVERSIFICATION AND INVESTOR'S NEEDS

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ABSTRACT

This thesis focuses on the development of the frontier markets of Africa and the correlation between these markets and the developed and emerging markets of the world, in an effort to analyze their role in international portfolio diversification. Academic research widely states that international stock markets, in particular, developed and emerging markets, are becoming more correlated partially due to the driving factor of globalization. As the last investment frontier for emerging market investment, Africa is becoming an interest to investors worldwide as a means to add increased diversification to their portfolios. Research concerning the possible profitable opportunities in African markets has been largely overlooked and many questions regarding the benefits of investing in the frontier markets of Africa are left unanswered. This paper seeks to answer these questions by analyzing the degree of correlation between a sample of the frontier markets of Africa and the developed and emerging markets, as well as a volatility analysis of each respective market. The results of the research suggest that investments in the African frontier markets may be a valuable addition to an investor's world portfolio because these markets do not have relatively average means and standard deviations, while at the same time providing lower correlations to one another and various world markets.

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Chapter 1

Introduction

The goal of this paper is to determine the degree of correlation between each of the frontier markets of Africa and the developed and emerging markets, in an effort to analyze their role in international portfolio diversification. Academic research widely states that global indexes are becoming more correlated between developed markets, and between developed and emerging markets. This widely reduces the benefit of investing internationally to increase portfolio diversification. As the last efficient frontier for emerging market investment, Africa is becoming an interest to investors worldwide.

This paper will answer the question of whether or not the correlation between the various global markets increases with advances in industrialization. More specifically, the research for this paper will determine the correlation between the frontier markets of Africa and the emerging market economies of Brazil, Russia, India, China, and South Africa (BRICS), and between three developed markets, the United States, the United Kingdom, and Japan. The research for this paper will be based on an analysis of previous papers on the topic, as well as first hand data and calculations. There are many papers that will be analyzed in order to gain a deeper perspective on the subject. Primary research will then be conducted by calculating the correlation coefficients between stock indexes representing several of the African frontier markets and indexes representing developed and emerging markets. Also, the degree of correlation among indexes in the same market classification will be analyzed as well. The monthly returns for each of the stock indexes was retrieved from Bloomberg, and were then manipulated using Microsoft Excel to determine the correlation coefficients and summarize them in a table.

In addition, the paper analyzes the volatility of the monthly returns for each index. This analysis provides insight into how far the monthly returns deviate from the mean over the timeframe of the sample used in the study. This metric allows investors to gain a deeper understanding of the risks associated with a particular market by telling how much the returns may deviate from the expected returns. The mean and standard deviation for each index were calculated in Excel and summarized in a table.

This research is intended to benefit investors and academics interested in possible profitable opportunities of investing in the frontier markets of African and their role in international portfolio diversification. The conclusions will benefit these individuals in their efforts to create more diversified portfolios and minimize risk. Just as this research is an extension of previous papers and conclusions, this paper will pave the way for more research on the topic in the future.

Chapter 2

Literature Review

International Portfolio Diversification

For years, investors have been interested in holding globally diversified portfolios, as opposed to domestic only portfolios because diversified portfolios should earn a higher return for a given level of risk. This increase in return and reduction in risk can be attributed to the lower degree of correlation between global markets. The lower degree of correlation of returns, or relationship between the two variables exists because international markets move independently and react to different factors, such as, the different monetary and fiscal policies of the respective countries. This is important because rarely do markets that are winners one year, become winners again the following year, and when one market performs poorly, the poor performance may be offset by better performance in the non-correlated market (Fisher). Over time, the diversification could help produce higher long-term returns with less risk. According to an article “Basics of Emerging Market Investment”, “Diversification cannot assure a profit or protect against loss in a declining market, spreading your portfolio across a number of countries can help you take advantage of a larger opportunity set and potentially reduce losses that occur in any single market.” However, today, investors are becoming apprehensive about the benefits international diversification has on the risk-adjusted performance of the portfolio (Fisher).

A diversified portfolio of international stocks has half as much risk as a diversified portfolio of domestic stocks. However, according to several studies, portfolios are less internationally diversified than asset allocation model’s predict is optimal. One possible explanation for this trend in lower numbers of investors with internationally diversified portfolios is that international diversification produces more benefits in the medium and long term, as

opposed to the short term. Other explanations include the possible disadvantages associated with international markets, which include currency risk, insufficient and unpredictable market knowledge, and liquidity concerns in smaller markets (Moss and Thuotte).

Co-Movements between Developed Markets and Emerging Markets

At one point, holding a diversified portfolio by investing in other international developed market stocks was enough; however, as markets began to converge, investors became interested in investing in emerging market stocks from around the world due to their lower levels of correlation until now when even these are raising concerns. More specifically, emerging markets are described as developing economies that are experiencing rapid growth and industrialization. Generally, emerging markets have less and smaller publically traded companies compared to developed markets, as well as less liquidity and regulation. There are several markets that are considered emerging market economies, but the most prominent are Brazil, Russia, India, and China, also known as the “BRIC” economies (“Basics of Emerging Market Investment”). The categorization of the “BRIC” countries was originally coined by Jim O’Neil, from Goldman Sachs in a paper he published in 2001 describing the economic potential he forecasted for these countries in the first half of the 21st century. In 2010, South Africa was added to this grouping making it the “BRICS” economies (Ghosh).

According to a Morningstar study, the level of correlation between international markets has increased, in particular, the correlation between emerging and developed market stocks. The study described in the article, “Why Have Global Correlations Increased,” calculated the correlation coefficient between several developed markets and emerging markets over the course of 15 years, from 1997 until 2012. The study found that correlation coefficients significantly increased over that time period (Glaser). These results show that the benefits of investing in

emerging market stocks in an effort to increase the risk adjusted returns of the portfolio through lower correlations have been reduced during the last several years.

There are a number of logical reasons to explain this trend of increased correlations between countries during the last several years. One explanation is the increase in globalization. In other words, companies in developed markets have been doing more business in developing markets, which has led to companies in the emerging markets gaining more contact with the developed countries. This has led to a greater worldwide impact on the global economy, rather than just local economies. Another explanation is the financial crisis, which negatively impacted every economy worldwide. However, this does not mean that these markets will be highly correlated forever, or that there are no other options for global diversification because investors must consider the last efficient frontier of emerging market investment, the frontier markets of Africa (Glaser).

The Frontier Markets of Africa

Just as the emerging market economies were grouped together as markets with future economic potential, the frontier markets are the newest classification of small markets with investment potential. In general, the group of frontier markets is characterized as smaller, less advanced, and more volatile than the emerging market economies. The frontier markets are growing in popularity and size because local companies have been using the capital markets as a means for capital expansion. The frontier markets of Africa may be promising to investors looking to reduce risk from investing in only developed and emerging market stocks in order to help achieve diversification benefits (Morara).

There are several countries on the African continent that have been classified as frontier markets. MCSI, a company that serves as a lead provider of investment support tools, regularly

reviews the classification of countries based on their MCSI Market Classification Framework, which measures each country's economic development, size, liquidity, and market accessibility ("MCSI Country and Regional Indexes"). According to MCSI, there are eight frontier markets (FM) in Africa. These markets include Botswana, Ghana, Kenya, Mauritius, Morocco, Nigeria, Tunisia, and Zimbabwe ("MCSI Country and Regional Indexes"). For the research conducted in this study, only Botswana, Kenya, Mauritius, Nigeria, and Tunisia will be used due to a lack of sufficient data for Ghana, Morocco, and Zimbabwe.

In the paper, "Co-Movements Between Developed Stock Markets and the Frontier Stock Markets of Africa", written by Kamanda Morara in 2011, it was found that three of the African frontier markets of Nigeria, Tunisia, and Kenya had lower levels of correlation than the emerging markets of China, Brazil, and India when compared to the developed markets of Japan, the United States, and the United Kingdom. In addition, the researcher found that the frontier markets were less volatile than the emerging markets and only slightly more volatile than the developed markets. This lower degree of volatility suggests that the markets may not be as risky as often stated. Furthermore, the study showed that there are low levels of correlation between the three African frontier markets used in the study. This illustrates that investing across the three African markets used in the study will increase the diversification benefits even more. The study was conducted over a period of four years from January 2007 to December 2010 (Morara).

In the paper, "Nowhere Left to Hide: Stock Market Correlation, Regional Diversification, and the Case for Investing In Africa," Todd Moss and Ross Thuotte, study the trends in global market correlation over the past two decades. The authors use the S&P 500 as the principal benchmark for determining global market correlation trends. They included data from all major global indices in every region. More specifically, 17 different sub-Saharan markets are included in the research when available. The authors' goal was to determine the relative potential of Saharan African exchanges as a vehicle for enhancing international portfolio diversification. The

data is sourced from January 1990 through September 2012. All monthly returns were calculated in US dollar terms, in order to eliminate inflation and make the results more comparable (Moss and Thuotte).

In the end, they find that, as expected, regional indices have become increasingly more correlated with the S&P 500 index, which reduces the benefits of international portfolio diversification. However, the Sub-Saharan markets are noticeable laggards with this trend and do not display high correlation with the benchmark. In addition, the correlations among African markets are generally very low. This is interesting because correlation within regional indices is generally higher than the correlation with a developed country benchmark. The authors illustrate that Africa's correlation lag is a key issue for investors looking for regional diversification in order to boost returns and manage risk, but they do not fail to mention that there are many constraints including scale, liquidity, foreign exchange risk, and volatility associated with the benefits (Moss and Thuotte).

Clearly, the topic of international portfolio diversification and the possible opportunities of investing in frontier African markets is an interest to investors worldwide. There has been much research related to the topic. However, there is no research that compares the African frontier markets to the most prominent of the emerging markets, the BRICS countries of Brazil, Russia, India, China, and South Africa. In addition, the previous literature is somewhat outdated, and no paper could be obtained that included returns from 2013 and into 2014. The research conducted in this paper, serves to fill this gap and determine the degree of correlation and volatility associated with the frontier markets of Africa and the emerging BRICS economies, as well as the developed world.

Chapter 3

Methodology

Methodology Overview

In order to determine the degree of correlation between indexes representing the frontier markets of Africa and indexes representing the developed and emerging markets, as well as to determine the degree of correlation between the African frontier markets themselves, primary research was conducted. Raw data was retrieved using Bloomberg. Microsoft Excel was then used to run calculations on the data and determine the correlation coefficients. The various correlation coefficients were then organized in a correlation matrix using Excel. In addition, the mean and standard deviation for each index was computed using Excel in order to determine the volatility of investing in each market.

Sourcing Data for Global Indexes

Bloomberg was used as a means for retrieving the monthly adjusted closing prices of various indexes around the world from 4/30/1999 to 2/28/2014. The data was sourced from Bloomberg using the Bloomberg Application Programming Interface (API) Excel insert and creating a working spreadsheet in order to retrieve the necessary data. More specifically, the Bloomberg API Excel formula called Bloomberg Data History (BDH) was used to import the monthly adjusted closing prices of each index over the assigned period of approximately 14 years.

The syntax for the formula used was =BDH("TICKER", "FIELD", "START DATE", "END DATE", "OPTIONAL PARAMATERS"). The particular indices and their respective tickers were sourced from the Bloomberg search function "SECF" followed by searching the "Index and Stats" tab. The "FIELD" was described as "TOT_RETURN_INDEX_GROSS_DVDS". Furthermore, the start date listed in this spreadsheet is the most historical date in which most of the indices had retrievable data. The end date is the most current date of accessible prices, which is February 28, 2014. Finally, the parameter was entered as "PER=M". For example, for the JALSH FTSE/JSE Africa All Share Index, the formula was entered as =BDH("TICKER JALSH", "TOT_RETURN_INDEX_GROSS_DVDS", "4/30/1999", "2/28/2014", "PER=M"). This process was repeated for each of the indexes included in the study (Bloomberg L.P.).

INDEX NAME	JALSH INDEX
FIELD	TOT_RETURN_INDEX_GROSS_DVDS
START DATE	36280
END DATE	41698
PERIODICITY	PER=M

Figure 1 BDH Excel Template Preview

After retrieving the monthly adjusted closing prices of each index over the approximately 14 year span, the monthly returns were computed manually in Excel. The returns were calculated using the percent change in price formula by subtracting the previous month's adjusted close rice from the current month's adjusted close price, dividing that number by the previous month's adjusted close price and multiplying by 100. The formula used is:

$$\text{Percent (\%) Change in Price} = \frac{(\text{New Price} - \text{Old Price})}{\text{Old Price}} \times 100$$

Global Index Mean and Volatility Calculation

The mean and standard deviation were calculated for each individual country index in order to analyze the volatility of the markets being studied and determine which returns are most likely to occur for a given index. The standard deviation tells how widely a set of returns vary from the mean, or average return of the sample. When the standard deviation of a sample is high, there is a wider range of returns for that given index over the specified period of time. This implies that there is a higher degree of volatility in the sample (“Standard Deviation”).

First the mean was calculated by using the Excel function AVERAGE, which produces the average monthly return of the arguments. The syntax for the function is =AVERAGE (number 1, (number 2), ...). Where “number 1” is the required first cell reference for determining the average, and “number 2” is the optional second cell references for determining the average. The average is calculated by adding up a given sample of numbers and dividing that total by the count of those numbers (“Support”).

Next, the standard deviation was calculated for each index respectively. The standard deviation measures how widely the values of a given sample deviate from the mean. The syntax for determining the standard deviation in excel is =STDEV(number 1, number 2, ...). Where the arguments “number 1” and “number 2” represent a sample of the population and not the entire population (“Support”). The STDEV function in Excel uses the following formula to determine the standard deviation of each data set:

$$\text{Standard Deviation} = \sqrt{\frac{\sum(x - \bar{x})^2}{(n - 1)}}$$

Calculation of the Correlation Coefficient for Index Pairs

Next, the degree of correlation between the respective market pairs was determined by computing the correlation coefficient using Microsoft Excel. The correlation coefficient, known as the Pearson Product-Moment Correlation Coefficient (PMCC), denoted by r , was used as the basis for the calculation. It was developed by Karl Pearson in 1895. More specifically, the PMCC is a measure of the strength of the relationship, or correlation, between two variables, X and Y . The PMCC is between the values of +1 and -1, where +1 indicates a positive correlation, 0 indicates no correlation, and -1 indicates negative correlation (Jackson 159). The PMCC formula is:

$$r = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sqrt{[\sum(x - \bar{x})^2 \sum(y - \bar{y})^2]}}$$

Where:

r represents the Pearson product-moment correlation coefficient

x represents a variable

y represents a variable

\bar{x} represents average of variable x

\bar{y} represents average of variable y

Although this PMCC formula can be used to manually calculate the correlation coefficients, Microsoft Excel was used as a more efficient resource for determining the correlation coefficients. After manually calculating the monthly returns from the monthly

adjusted closing prices, the correlation coefficients were determined using the excel function for correlation. The syntax for the function is CORREL (array1, array2). Where array1 is a cell range of values and array2 is a second cell range of values (“Support”). However, in order to determine the correlation for this large data set, Excel’s “Data Analysis” tool pack for correlation was used. The Data Analysis correlation tool produces a correlation matrix displaying the output of the CORRELL (array1, array2) function for each possible set of variables (“Support”).

Method Limitations

The data retrieved for the study was limited in width and scope. Although there are about 17 stock markets in Africa, the sample of African stock exchanges used for this study was limited to only those for which historical monthly returns could be retrieved. In terms of scope, the data range was limited to approximately 14 years because of the lack of long term data accessibility for the African indexes that were available on Bloomberg. In addition, potential errors could exist if information is available regarding African frontier markets that were not obtained for this study due to a lack of resources and accessible databases.

Chapter 4

Research Findings

Summary of Volatility Analysis

After computing the mean and standard deviation for each market being studied, the results were summarized in Table 2 and Table 3. As mentioned above, the standard deviation data tells how far the index's returns fall from the mean between the years of 1999 to 2014. Overall, the means and standard deviations of the frontier markets being studied appear to be average compared to the emerging and developed markets in the study. The means of the developed markets are the lowest, and the means of the emerging and frontier markets are very similar.

In general, the frontier markets have slightly higher standard deviations than the developed markets, but relatively lower standard deviations than the emerging BRICS countries. Russia, China, and Brazil have the highest standard deviations respectively, suggesting that they have relatively more unpredictable returns and; therefore; are more risky investments than the frontier markets of Africa. Of the frontier markets, Tunisia has the lowest standard deviation from the mean. This suggests that investing in Tunisia is a relatively less risky than investing in any of the other markets analyzed in this study.

If the returns follow a normal distribution, they will fall within plus or minus one standard deviation of the mean 67% of the time, plus or minus two standard deviations from the mean 95% of the time, and plus or minus three standard deviations from the mean 99% of the time ("Standard Deviation"). For example, Botswana has a standard deviation of about 4% and a mean of about 1.5%. In other words, 67% of the time, the mean will fall between -2.5% and

5.5%. Furthermore, 95% of the time, the mean will be between -6.5% and 9.5%. Finally, the mean will fall between -10.5% and 13.5%, 99% of the time.

Table 1 Mean Monthly Returns April 1999 to February 2014

Japan	0.2128%
UK	0.4180%
US	0.4436%
Brazil	1.0855%
Russia	2.1320%
India	1.4396%
China	0.8032%
S. Africa	1.4370%
Botswana	1.5112%
Kenya	0.5644%
Mauritius	1.1602%
Nigeria	1.4728%
Tunisia	0.9745%

Table 2 Standard Deviations of Monthly Returns April 1999 to February 2014

Japan	5.7946%
UK	4.1719%
US	4.4824%
Brazil	7.5446%
Russia	9.5729%
India	7.2987%
China	8.1576%
S. Africa	5.2101%
Botswana	4.0098%
Kenya	5.9537%
Mauritius	4.4800%
Nigeria	7.3235%
Tunisia	3.8592%

Summary of Correlation Coefficient Analysis

Although the mean and standard deviation metrics produced valuable information leading to the conclusion that the frontier markets have relatively average means and standard deviations for investment purposes, in Finance, investor's are concerned with the correlations between various stocks as well. The calculation of the correlation coefficients between each pair of indexes, including frontier markets of Africa, the emerging BRICS markets, and the developed markets, produced valuable results for the purpose of the study. Generally, the results suggest that correlation between markets does increase with increases in industrialization. This suggests that investments in African frontier markets provide investors with the lowest degrees of correlation between developed and emerging markets. The results were interpreted from the correlation matrix produced in excel. As briefly mentioned above, the correlation coefficients for each pair of indexes is a value between +1 and -1. The closer the number is to +1, the more positively correlated the pair of indexes. The closer the number is to -1, the more negatively correlated the pair of indexes. A correlation coefficient of 0 indicates no correlation (Jackson 159).

Table 3 Co-Efficient of Correlation April 1999 to February 2014

	Japan	UK	US	Brazil	Russia	India	China	S. Africa	Botswana	Kenya	Mauritius	Nigeria	Tunisia
Japan	1.00	0.57	0.61	0.47	0.47	0.53	0.26	0.53	-0.03	0.26	0.27	0.25	0.06
UK	0.57	1.00	0.87	0.65	0.49	0.50	0.18	0.67	-0.05	0.27	0.24	0.17	0.06
US	0.61	0.87	1.00	0.67	0.55	0.51	0.26	0.65	0.00	0.34	0.36	0.25	0.07
Brazil	0.47	0.65	0.67	1.00	0.56	0.57	0.30	0.65	-0.09	0.26	0.30	0.18	0.04
Russia	0.47	0.49	0.55	0.56	1.00	0.41	0.31	0.52	-0.11	0.15	0.27	0.28	0.07
India	0.53	0.50	0.51	0.57	0.41	1.00	0.32	0.52	-0.03	0.26	0.36	0.18	0.14
China	0.26	0.18	0.26	0.30	0.31	0.32	1.00	0.26	0.01	0.19	0.19	0.20	0.00
S. Africa	0.53	0.67	0.65	0.65	0.52	0.52	0.26	1.00	-0.01	0.27	0.31	0.24	0.02
Botswana	-0.03	-0.05	0.00	-0.09	-0.11	-0.03	0.01	-0.01	1.00	-0.08	0.06	0.07	0.08
Kenya	0.26	0.27	0.34	0.26	0.15	0.26	0.19	0.27	-0.08	1.00	0.43	0.24	0.11
Mauritius	0.27	0.24	0.36	0.30	0.27	0.36	0.19	0.31	0.06	0.43	1.00	0.29	0.09
Nigeria	0.25	0.17	0.25	0.18	0.28	0.18	0.20	0.24	0.07	0.24	0.29	1.00	-0.09
Tunisia	0.06	0.06	0.07	0.04	0.07	0.14	0.00	0.02	0.08	0.11	0.09	-0.09	1.00

First, the correlation coefficient between market pairs within each of the three market classifications were analyzed; including, developed markets, emerging markets, and the frontier markets of Africa. The developed markets of the United States, the United Kingdom, and Japan are the most highly correlated with one another with correlation coefficients the closest to +1. The highest, is the correlation coefficient between the United States and the United Kingdom which produced a correlation coefficient of .87. The emerging markets are all positively correlated with one another, but to a lesser degree. The frontier markets of Africa all have relatively low positive correlations, as well as some negative correlations with one another. This serves as evidence to the notion that developed markets are highly correlated.

However, this still leads to question of whether or not emerging markets can still serve as an effective means to diversify risk by holding a non-highly correlated portfolio. An analysis of the correlation coefficients between each of the emerging markets with each developed market as the benchmark will help answer this question. The data shows that the emerging markets and developed markets are all positively correlated; however,

there are varying degrees of correlation between each pair. The United Kingdom and South Africa are mostly highly correlated with a correlation coefficient of .67, as well as the United States and Brazil which also have a correlation of .67. The lowest degree of correlation is between China and the United Kingdom, which has a significantly lower correlation of .18. Overall, the majority of emerging market and developed market pairs have relatively high degrees of correlation. According to these results, investors from developed markets interested in investing internationally in emerging market stocks to help diversify risk, would benefit from investing in Chinese markets.

Finally, an analysis of the correlation coefficients between each of the frontier markets of Africa and the developed markets as the benchmark indicates that there is not a high degree of correlation. This suggests that investing in the frontier markets of Africa serves as a good strategy to help diversify the risk of investing in highly correlated stocks. The highest degree of correlation between the African frontier markets and the developed markets is between Mauritius and the United States with a correlation coefficient of .36, and the lowest is between Botswana and the United Kingdom with a correlation coefficient of -.05.

Limitations of Research Findings

Clearly, there are some limitations to the research findings. The data does not perfectly support the claim that correlations between markets are increasing with increases in industrialization. However, in general, the claim is supported. One particular

note of interest is that overall the frontier markets of Africa appear to be more highly correlated to some of the developed markets than to some of the Emerging Markets.

Chapter 5

Conclusion

The goal of determining the degree of correlation between and among the frontier markets of African and the developed and emerging markets was effectively achieved in the research described in this paper. The results of this study suggest that correlation between world stock markets generally increases with advances in industrialization. Fortunately for investors, the frontier markets of Africa appear to be a valuable means to avoid this convergence. The results of this study show that frontier African markets exhibited average means and standard deviations compared to other world markets. At the same time, these markets proved to have relatively lower degrees of correlation with developed and emerging markets. These findings imply that African frontier market stocks should be included in an international investor's diversified portfolio in order to increase the portfolio's risk-adjusted returns.

Although there has been some related research on the topic, this paper provides the most up to date data with the largest number of frontier African indexes over the longest sample period, in order to determine the correlation coefficients, means, and standard deviations of world markets. This paper not only expands upon research already conducted on the field, but also serves as a foundation for further research that will continue to guide investors and their investment decisions. As the markets in the developed world continue to become more correlated, investors will value these research findings as a plausible means to diversify their portfolios and minimize risk. This is due

to the fact that African frontier markets prove to be the last efficient frontier for emerging market investments due to their relatively average means and standard deviations coupled with their lower degrees of correlation to other world markets.

Appendix A

Stock Market Monthly Prices April 1999 to February 2014

Date	Japan	UK	US	Brazil	Russia	India	China	S. Africa	Botswana	Kenya	Mauritius	Nigeria	Tunisia
Apr-99	16702	6552	1335	11351	97	3326	1121	6695	965	2768	403	5316	1069
May-99	16112	6234	1304	11090	108	3964	1281	6160	962	2760	405	4916	1077
Jun-99	17536	6343	1376	11627	132	4141	1696	6738	977	2756	419	5978	1055
Jul-99	17868	6261	1333	10442	115	4542	1609	6832	1075	2745	397	4964	1079
Aug-99	17442	6310	1326	10565	101	4898	1637	6674	1310	2494	403	4946	1134
Sep-99	17654	6103	1290	11106	87	4764	1581	6625	1438	2428	403	4891	1145
Oct-99	17992	6336	1372	11700	107	4445	1514	6938	1397	2309	406	5042	1201
Nov-99	18610	6692	1400	13779	121	4622	1445	7421	1374	2294	416	5133	1187
Dec-99	18995	7047	1482	17092	152	5006	1377	8385	1375	2303	436	5266	1171
Jan-00	19605	6378	1408	16388	189	5205	1546	8277	1389	2301	435	5753	1340
Feb-00	20026	6361	1381	17660	191	5447	1727	7759	1409	2295	427	5956	1320
Mar-00	20475	6702	1516	17820	255	5005	1814	7792	1439	2233	413	5966	1336
Apr-00	18095	6498	1470	15538	243	4687	1851	7271	1486	2162	408	5893	1315
May-00	16443	6541	1440	14957	217	4467	1911	7191	1479	2053	411	6095	1328
Jun-00	17532	6501	1476	16728	195	4788	1948	7584	1448	2003	410	6467	1345
Jul-00	15837	6561	1453	16455	200	4321	2048	7636	1479	1967	405	6901	1414
Aug-00	16980	6910	1543	17347	239	4521	2047	8377	1557	1959	402	7394	1432
Sep-00	15891	6532	1461	15928	205	4142	1935	8162	1535	2001	405	7299	1445
Oct-00	14672	6688	1455	14867	192	3758	1987	8040	1455	2043	406	7415	1373
Nov-00	14783	6391	1341	13287	150	4049	2098	7712	1443	1930	401	7141	1411
Dec-00	13915	6483	1347	15259	144	4023	2101	8164	1426	1913	390	8111	1443
Jan-01	13975	6564	1395	17673	168	4382	2093	8942	1450	1897	391	8794	1413
Feb-01	13008	6191	1268	15891	158	4302	1985	8916	1512	1933	397	9181	1330
Mar-01	13174	5925	1188	14438	167	3657	2141	8094	1677	1831	392	9160	1327
Apr-01	14122	6288	1280	14918	177	3580	2148	8902	1752	1768	400	9592	1356
May-01	13441	6121	1288	14650	208	3709	2248	9271	1886	1636	383	10154	1395
Jun-01	13146	5967	1257	14560	219	3534	2258	9090	1976	1657	387	10937	1314
Jul-01	12023	5851	1245	13754	201	3420	1957	8456	2080	1621	372	10576	1319
Aug-01	10861	5688	1167	12841	194	3340	1870	8887	2194	1506	366	10329	1333
Sep-01	9940	5230	1073	10636	167	2899	1800	7998	2211	1401	356	10274	1275
Oct-01	10541	5381	1093	11365	187	3084	1723	8474	2273	1473	349	11091	1279
Nov-01	10879	5568	1177	12932	213	3393	1783	9404	2346	1420	348	11170	1250
Dec-01	10724	5586	1187	13578	236	3367	1684	10456	2425	1355	341	10963	1269

Jan-02	10171	5533	1170	12721	261	3418	1526	10334	2500	1343	374	10650	1280
Feb-02	10775	5489	1147	14033	263	3684	1560	10875	2574	1314	373	10582	1272
Mar-02	11262	5707	1190	13255	303	3588	1641	11015	2610	1183	373	11214	1255
Apr-02	11740	5605	1118	13085	342	3460	1707	11008	2634	1129	354	11399	1198
May-02	12018	5530	1110	12861	334	3243	1553	11201	2597	1071	354	11486	1197
Jun-02	10853	5074	1031	11139	304	3370	1781	10658	2564	1087	359	12441	1189
Jul-02	10093	4635	951	9763	282	3123	1704	9239	2479	1098	366	12458	1182
Aug-02	9831	4646	957	10382	292	3339	1721	9677	2469	1043	375	12328	1142
Sep-02	9620	4100	853	8623	290	3145	1634	9465	2476	1043	381	11812	1197
Oct-02	8858	4457	928	10168	311	3111	1557	9409	2443	1088	380	11339	1138
Nov-02	9448	4611	983	10509	321	3406	1481	9611	2497	1161	386	11623	1126
Dec-02	8799	4363	925	11268	319	3565	1402	9339	2497	1363	399	12138	1114
Jan-03	8555	3953	901	10941	308	3431	1549	8876	2453	1511	448	13299	1054
Feb-03	8582	4075	887	10281	342	3467	1562	8494	2335	1558	425	13669	1046
Mar-03	8228	4063	896	11274	326	3219	1560	7829	2285	1608	425	13605	1041
Apr-03	8082	4429	969	12557	370	3133	1573	7701	2266	1847	454	13488	1181
May-03	8695	4582	1021	13422	421	3382	1631	8784	2263	2075	475	14086	1158
Jun-03	9377	4572	1034	12973	455	3849	1548	8608	2242	1935	487	14529	1166
Jul-03	9873	4721	1052	13572	430	4071	1541	9096	2236	1983	476	13962	1232
Aug-03	10680	4764	1072	15174	488	4580	1485	9564	2247	2107	472	15426	1221
Sep-03	10585	4694	1061	16011	526	4812	1429	9294	2312	2380	495	16379	1219
Oct-03	10937	4925	1121	17982	480	5305	1409	10202	2367	2457	530	18743	1216
Nov-03	10463	5006	1131	20184	497	5455	1461	10180	2428	2737	547	19319	1224
Dec-03	11064	5165	1190	22236	528	6316	1565	10884	2486	2738	550	20095	1250
Jan-04	11176	5068	1212	21851	566	6163	1663	11388	2511	3159	582	22713	1258
Feb-04	11446	5203	1229	21755	608	6136	1751	11443	2589	3175	596	24797	1261
Mar-04	12200	5129	1210	22142	663	6053	1821	11297	2641	2771	608	22896	1302
Apr-04	12248	5261	1191	19607	578	6124	1670	11031	2734	2708	643	25936	1320
May-04	11701	5209	1207	19545	556	5184	1633	11065	2826	2689	649	27731	1329
Jun-04	12353	5262	1231	21149	555	5241	1481	10774	2852	2640	649	28887	1324
Jul-04	11798	5206	1190	22337	522	5675	1470	11005	2839	2708	649	27062	1324
Aug-04	11546	5302	1195	22803	570	5711	1424	11967	2837	2709	642	23774	1320
Sep-04	11318	5443	1208	23245	634	6160	1483	12655	2867	2671	661	22693	1307
Oct-04	11263	5510	1226	23052	658	6262	1403	12578	2885	2835	671	23313	1350
Nov-04	11397	5628	1276	25128	594	6885	1425	13491	2898	2918	693	23270	1339
Dec-04	12020	5767	1319	26196	574	7303	1346	13685	2895	2928	708	23293	1334
Jan-05	11915	5815	1287	24351	599	7251	1266	13875	2893	3094	730	23074	1327
Feb-05	12287	5983	1314	28139	661	7426	1388	14633	2923	3213	737	21954	1315
Mar-05	12282	5942	1291	26611	627	7181	1255	14511	2997	3126	744	20682	1369
Apr-05	11587	5841	1266	24844	623	6807	1234	13764	3058	3228	714	21962	1492

May-05	11869	6059	1307	25207	640	7442	1134	15119	3155	3505	714	21393	1538
Jun-05	12198	6261	1308	25051	678	8020	1168	15567	3254	3972	724	21565	1545
Jul-05	12531	6473	1357	26042	752	8531	1175	16685	3284	3982	736	21911	1556
Aug-05	13075	6541	1345	28045	842	8744	1266	17031	3344	3939	767	22375	1564
Sep-05	14349	6773	1356	31584	958	9684	1260	18732	3434	3833	833	24636	1589
Oct-05	14383	6579	1333	30194	904	8857	1192	18294	3508	3939	812	25874	1599
Nov-05	15721	6744	1383	31917	1015	9863	1199	18687	3541	3974	819	24356	1604
Dec-05	17041	6992	1384	33456	1086	10557	1267	20197	3556	3973	804	23922	1615
Jan-06	17611	7171	1420	38383	1259	11144	1373	22061	3609	4172	826	23679	1684
Feb-06	17146	7234	1424	38610	1419	11655	1418	21352	3750	4063	839	23954	1729
Mar-06	18138	7511	1442	37952	1402	12680	1418	22873	3875	4102	848	23337	1871
Apr-06	17975	7600	1461	40363	1605	13543	1577	23841	4096	4025	828	23301	1930
May-06	16446	7253	1419	36530	1397	11724	1803	23204	4209	4350	812	24746	2008
Jun-06	16492	7413	1421	36631	1451	12007	1853	23987	4314	4260	841	26161	1945
Jul-06	16441	7539	1430	37077	1504	12191	1791	23642	4502	4259	871	27881	1917
Aug-06	17173	7567	1464	36232	1579	13298	1843	24931	4847	4486	916	33096	2023
Sep-06	17228	7647	1502	36449	1490	14168	1950	25521	5190	4880	966	32555	2139
Oct-06	17518	7868	1551	39263	1555	14750	2045	26689	6017	5314	1077	32644	2302
Nov-06	17385	7801	1580	41932	1690	15591	2336	27407	6164	5615	1260	31633	2318
Dec-06	18414	8028	1602	44474	1846	15708	2977	28545	6195	5646	1217	33189	2331
Jan-07	18583	8008	1626	44642	1806	16055	3101	29186	6415	5774	1266	36785	2565
Feb-07	18825	7994	1594	43892	1804	14750	3206	29628	7197	5387	1313	40731	2596
Mar-07	18590	8239	1612	45805	1855	14934	3543	31523	7869	5134	1364	43456	2596
Apr-07	18711	8444	1684	48956	1834	15857	4276	32619	8054	5199	1407	47124	2595
May-07	19223	8702	1742	52268	1735	16628	4579	33192	8998	5002	1372	49159	2552
Jun-07	19515	8709	1713	54392	1841	16812	4270	32881	9718	5147	1466	51330	2512
Jul-07	18558	8387	1660	54183	1917	17863	5005	33206	9991	5340	1512	53022	2450
Aug-07	17831	8375	1685	54637	1855	17619	5844	33424	9981	5372	1494	49762	2493
Sep-07	18150	8605	1748	60465	1947	19897	6219	35111	9934	5146	1593	50229	2468
Oct-07	18099	8963	1776	65318	2074	22835	6670	36794	9375	4971	1781	50202	2546
Nov-07	16956	8607	1703	63006	2050	22296	5457	35630	9112	5235	1902	54190	2609
Dec-07	16568	8646	1691	63886	2093	23373	5893	34082	8596	5445	1931	57990	2616
Jan-08	14713	7877	1590	59490	1744	20335	4910	32180	8438	4713	2049	58571	2658
Feb-08	14730	7918	1538	63489	1839	20264	4871	36192	8359	5072	2101	65075	2685
Mar-08	13676	7751	1531	60968	1808	18039	3890	35110	8294	4843	1965	63147	2731
Apr-08	15122	8300	1606	67868	1854	19940	4139	36583	7483	5336	1946	59441	2992
May-08	15655	8289	1627	72593	2160	18985	3858	37947	7149	5176	1970	58929	2974
Jun-08	14730	7732	1490	65018	1968	15589	3098	36293	7420	5159	1935	55949	3113
Jul-08	14616	7447	1477	59505	1679	16686	3147	33137	7676	4868	1830	53111	3099
Aug-08	14289	7813	1499	55680	1516	16957	2718	33245	8013	4649	1752	47789	3392

Sep-08	12397	6811	1365	49541	1155	14986	2607	28883	8795	4180	1667	46216	3430
Oct-08	9443	6093	1136	37257	823	11417	1965	25522	8697	3387	1427	36326	3113
Nov-08	9372	6013	1054	36596	688	10605	2127	25842	8139	3387	1260	33026	3018
Dec-08	9769	6226	1066	37550	697	11265	2070	26242	7336	3521	1283	31447	2951
Jan-09	8815	5831	976	39301	703	11011	2263	25133	7116	3199	1235	21814	3050
Feb-09	8352	5430	872	38183	749	10392	2368	22664	6798	2475	1007	23377	3123
Mar-09	9034	5594	949	40926	869	11348	2698	25159	6830	2805	1162	19852	3169
Apr-09	9835	6070	1039	47290	1036	13329	2817	25557	6550	2813	1233	21353	3470
May-09	10609	6357	1097	53198	1286	17095	2996	28197	6515	2853	1419	29700	3499
Jun-09	11102	6144	1099	51465	1113	17002	3399	27337	6687	3295	1555	26249	3812
Jul-09	11547	6671	1182	54766	1206	18440	3925	30100	6859	3273	1637	25287	3789
Aug-09	11704	7152	1225	56489	1251	18454	3069	31078	7235	3103	1651	23009	3942
Sep-09	11363	7493	1271	61518	1372	20194	3204	31164	7468	3005	1842	22065	4244
Oct-09	11253	7369	1247	61546	1418	18770	3454	33036	7637	3084	1874	21810	4241
Nov-09	10481	7627	1322	67044	1472	19991	3684	33748	8196	3190	1833	21031	4290
Dec-09	11841	7960	1347	68588	1570	20639	3778	34734	7915	3248	1870	20857	4482
Jan-10	11450	7635	1299	65402	1626	19333	3446	33526	8013	3565	1961	22680	4879
Feb-10	11377	7925	1339	66503	1517	19425	3519	33651	8420	3629	1856	23073	4874
Mar-10	12545	8443	1420	70372	1662	20733	3585	36313	8277	4073	1851	26096	4894
Apr-10	12508	8275	1442	67530	1648	20782	3312	36293	8365	4233	1912	26785	5090
May-10	11051	7763	1327	63047	1558	20090	3002	34437	8091	4242	1827	26571	5191
Jun-10	10623	7387	1258	60936	1531	21092	2798	33348	8186	4339	1878	25864	5205
Jul-10	10799	7911	1346	67515	1634	21317	3086	36035	8322	4439	1960	26410	5452
Aug-10	9999	7907	1285	65145	1601	21472	3088	34756	8273	4455	1965	24876	5676
Sep-10	10689	8412	1400	69430	1685	23998	3115	37794	8288	4630	2025	23668	6033
Oct-10	10499	8617	1453	70673	1782	23984	3494	39133	8289	4660	2143	25774	5441
Nov-10	11337	8424	1453	67705	1832	23379	3308	38962	8069	4395	2205	25600	5601
Dec-10	11685	8998	1551	69305	1976	24582	3294	41376	7250	4433	2283	25611	5429
Jan-11	11695	8950	1587	66575	2017	21971	3273	40492	7700	4465	2349	27742	4708
Feb-11	12144	9189	1642	67383	2081	21375	3408	41627	7821	4240	2353	26901	4310
Mar-11	11252	9107	1642	68587	2123	23323	3435	41848	7938	3887	2332	25492	4657
Apr-11	11361	9379	1691	66133	2045	22963	3416	42787	7985	4029	2406	26191	4511
May-11	11181	9293	1672	64620	1987	22253	3222	42458	8079	4078	2429	27321	4377
Jun-11	11332	9259	1644	62404	1988	22772	3285	41597	8239	3968	2451	26546	4607
Jul-11	11352	9063	1610	58823	2034	22032	3218	40772	8498	3738	2382	25350	4790
Aug-11	10345	8469	1523	56495	1845	20223	3059	40649	8633	3465	2299	22921	4877
Sep-11	10130	8070	1416	52324	1632	19961	2817	39197	8487	3290	2253	21738	5066
Oct-11	10466	8733	1570	58338	1789	21495	2948	42853	8330	3535	2235	22393	5064
Nov-11	9821	8724	1567	56875	1791	19581	2787	43538	8330	3181	2223	21402	5083
Dec-11	9860	8834	1583	56754	1674	18769	2627	42478	8345	3233	2256	22183	5126

Jan-12	10266	9015	1654	63072	1808	20911	2739	44917	8351	3252	2187	22339	5097
Feb-12	11349	9374	1725	65812	1908	21591	2901	45687	8354	3334	2124	21534	5177
Mar-12	11879	9255	1782	64511	1813	21184	2703	45048	8490	3507	2167	22341	5232
Apr-12	11216	9231	1771	61820	1767	21080	2864	46329	8810	3747	2162	24118	5525
May-12	10064	8614	1664	54490	1613	19827	2842	44666	8888	3864	2175	24205	5464
Jun-12	10622	9050	1733	54355	1714	21400	2707	45494	8969	3921	2140	23712	5432
Jul-12	10255	9161	1757	56097	1738	21215	2570	46727	9063	4063	2125	25348	5747
Aug-12	10435	9359	1796	57061	1758	21488	2503	48017	9088	4108	2046	26130	5723
Sep-12	10556	9429	1843	59176	1805	23145	2557	48816	9207	4255	2067	28645	5451
Oct-12	10625	9513	1809	57068	1765	22843	2536	50873	9451	4442	2037	29166	5377
Nov-12	11242	9698	1819	57475	1748	23892	2427	52213	9591	4375	2066	29236	5134
Dec-12	12389	9755	1836	60952	1833	24015	2782	53863	9515	4432	2134	30993	5036
Jan-13	13276	10392	1931	59761	1923	24598	2924	55601	9872	4737	2220	35159	5234
Feb-13	13788	10582	1957	57424	1847	23326	2900	54548	10087	4847	2302	36509	5098
Mar-13	14901	10728	2030	56352	1789	23325	2742	55229	10708	5223	2377	37102	5196
Apr-13	16660	10791	2069	55910	1734	24152	2671	53857	11251	5262	2363	37432	5086
May-13	16556	11098	2118	53506	1732	24609	2826	58441	11214	5535	2406	42765	5046
Jun-13	16454	10519	2089	47457	1707	24214	2476	55112	11255	5095	2370	40939	5097
Jul-13	16444	11214	2196	48234	1765	24204	2512	57544	11236	5306	2326	42977	5050
Aug-13	16119	10947	2132	50012	1759	23317	2647	59046	11056	5215	2406	41137	5154
Sep-13	17503	11045	2199	52338	1887	24301	2750	62044	11201	5334	2462	41584	5000
Oct-13	17348	11525	2300	54256	1952	26563	2708	64280	11509	5567	2561	42806	5031
Nov-13	18963	11434	2370	52482	1916	26099	2808	63574	11723	5688	2568	44293	5008
Dec-13	19747	11614	2430	51507	1948	26590	2676	65474	11986	5496	2656	47036	4909
Jan-14	18079	11214	2346	47639	1884	25810	2571	63933	12523	5417	2652	46175	5041
Feb-14	18001	11783	2453	47094	1871	26578	2601	67055	12170	5503	2637	45025	5282

Appendix B

Stock Market Index Monthly Returns May 1999 to February 2014

Date	Japan	UK	US	Brazil	Russia	India	China	S. Africa	Botswana	Kenya	Mauritius	Nigeria	Tunisia
May-99	-0.04	-0.05	-0.02	-0.02	0.12	0.19	0.14	-0.08	0.00	0.00	0.01	-0.08	0.01
Jun-99	0.09	0.02	0.06	0.05	0.22	0.04	0.32	0.09	0.02	0.00	0.03	0.22	-0.02
Jul-99	0.02	-0.01	-0.03	-0.10	-0.13	0.10	-0.05	0.01	0.10	0.00	-0.05	-0.17	0.02
Aug-99	-0.02	0.01	0.00	0.01	-0.12	0.08	0.02	-0.02	0.22	-0.09	0.02	0.00	0.05
Sep-99	0.01	-0.03	-0.03	0.05	-0.13	-0.03	-0.03	-0.01	0.10	-0.03	0.00	-0.01	0.01
Oct-99	0.02	0.04	0.06	0.05	0.23	-0.07	-0.04	0.05	-0.03	-0.05	0.01	0.03	0.05
Nov-99	0.03	0.06	0.02	0.18	0.13	0.04	-0.05	0.07	-0.02	-0.01	0.03	0.02	-0.01
Dec-99	0.02	0.05	0.06	0.24	0.26	0.08	-0.05	0.13	0.00	0.00	0.05	0.03	-0.01
Jan-00	0.03	-0.10	-0.05	-0.04	0.24	0.04	0.12	-0.01	0.01	0.00	0.00	0.09	0.14
Feb-00	0.02	0.00	-0.02	0.08	0.01	0.05	0.12	-0.06	0.01	0.00	-0.02	0.04	-0.01
Mar-00	0.02	0.05	0.10	0.01	0.33	-0.08	0.05	0.00	0.02	-0.03	-0.03	0.00	0.01
Apr-00	-0.12	-0.03	-0.03	-0.13	-0.05	-0.06	0.02	-0.07	0.03	-0.03	-0.01	-0.01	-0.02
May-00	-0.09	0.01	-0.02	-0.04	-0.11	-0.05	0.03	-0.01	0.00	-0.05	0.01	0.03	0.01
Jun-00	0.07	-0.01	0.02	0.12	-0.10	0.07	0.02	0.05	-0.02	-0.02	0.00	0.06	0.01
Jul-00	-0.10	0.01	-0.02	-0.02	0.03	-0.10	0.05	0.01	0.02	-0.02	-0.01	0.07	0.05
Aug-00	0.07	0.05	0.06	0.05	0.19	0.05	0.00	0.10	0.05	0.00	-0.01	0.07	0.01
Sep-00	-0.06	-0.05	-0.05	-0.08	-0.14	-0.08	-0.05	-0.03	-0.01	0.02	0.01	-0.01	0.01
Oct-00	-0.08	0.02	0.00	-0.07	-0.06	-0.09	0.03	-0.01	-0.05	0.02	0.00	0.02	-0.05
Nov-00	0.01	-0.04	-0.08	-0.11	-0.22	0.08	0.06	-0.04	-0.01	-0.06	-0.01	-0.04	0.03
Dec-00	-0.06	0.01	0.00	0.15	-0.04	-0.01	0.00	0.06	-0.01	-0.01	-0.03	0.14	0.02
Jan-01	0.00	0.01	0.04	0.16	0.16	0.09	0.00	0.10	0.02	-0.01	0.00	0.08	-0.02
Feb-01	-0.07	-0.06	-0.09	-0.10	-0.06	-0.02	-0.05	0.00	0.04	0.02	0.01	0.04	-0.06
Mar-01	0.01	-0.04	-0.06	-0.09	0.05	-0.15	0.08	-0.09	0.11	-0.05	-0.01	0.00	0.00
Apr-01	0.07	0.06	0.08	0.03	0.06	-0.02	0.00	0.10	0.04	-0.03	0.02	0.05	0.02
May-01	-0.05	-0.03	0.01	-0.02	0.17	0.04	0.05	0.04	0.08	-0.07	-0.04	0.06	0.03
Jun-01	-0.02	-0.03	-0.02	-0.01	0.06	-0.05	0.00	-0.02	0.05	0.01	0.01	0.08	-0.06
Jul-01	-0.09	-0.02	-0.01	-0.06	-0.09	-0.03	-0.13	-0.07	0.05	-0.02	-0.04	-0.03	0.00
Aug-01	-0.10	-0.03	-0.06	-0.07	-0.03	-0.02	-0.04	0.05	0.05	-0.07	-0.02	-0.02	0.01
Sep-01	-0.08	-0.08	-0.08	-0.17	-0.14	-0.13	-0.04	-0.10	0.01	-0.07	-0.03	-0.01	-0.04
Oct-01	0.06	0.03	0.02	0.07	0.12	0.06	-0.04	0.06	0.03	0.05	-0.02	0.08	0.00
Nov-01	0.03	0.03	0.08	0.14	0.14	0.10	0.03	0.11	0.03	-0.04	0.00	0.01	-0.02

Dec-01	-0.01	0.00	0.01	0.05	0.11	-0.01	-0.06	0.11	0.03	-0.05	-0.02	-0.02	0.02
Jan-02	-0.05	-0.01	-0.01	-0.06	0.10	0.02	-0.09	-0.01	0.03	-0.01	0.10	-0.03	0.01
Feb-02	0.06	-0.01	-0.02	0.10	0.01	0.08	0.02	0.05	0.03	-0.02	0.00	-0.01	-0.01
Mar-02	0.05	0.04	0.04	-0.06	0.15	-0.03	0.05	0.01	0.01	-0.10	0.00	0.06	-0.01
Apr-02	0.04	-0.02	-0.06	-0.01	0.13	-0.04	0.04	0.00	0.01	-0.05	-0.05	0.02	-0.05
May-02	0.02	-0.01	-0.01	-0.02	-0.03	-0.06	-0.09	0.02	-0.01	-0.05	0.00	0.01	0.00
Jun-02	-0.10	-0.08	-0.07	-0.13	-0.09	0.04	0.15	-0.05	-0.01	0.01	0.01	0.08	-0.01
Jul-02	-0.07	-0.09	-0.08	-0.12	-0.07	-0.07	-0.04	-0.13	-0.03	0.01	0.02	0.00	-0.01
Aug-02	-0.03	0.00	0.01	0.06	0.04	0.07	0.01	0.05	0.00	-0.05	0.03	-0.01	-0.03
Sep-02	-0.02	-0.12	-0.11	-0.17	-0.01	-0.06	-0.05	-0.02	0.00	0.00	0.02	-0.04	0.05
Oct-02	-0.08	0.09	0.09	0.18	0.07	-0.01	-0.05	-0.01	-0.01	0.04	0.00	-0.04	-0.05
Nov-02	0.07	0.03	0.06	0.03	0.03	0.09	-0.05	0.02	0.02	0.07	0.02	0.02	-0.01
Dec-02	-0.07	-0.05	-0.06	0.07	-0.01	0.05	-0.05	-0.03	0.00	0.17	0.04	0.04	-0.01
Jan-03	-0.03	-0.09	-0.03	-0.03	-0.03	-0.04	0.10	-0.05	-0.02	0.11	0.12	0.10	-0.05
Feb-03	0.00	0.03	-0.02	-0.06	0.11	0.01	0.01	-0.04	-0.05	0.03	-0.05	0.03	-0.01
Mar-03	-0.04	0.00	0.01	0.10	-0.05	-0.07	0.00	-0.08	-0.02	0.03	0.00	0.00	0.00
Apr-03	-0.02	0.09	0.08	0.11	0.14	-0.03	0.01	-0.02	-0.01	0.15	0.07	-0.01	0.13
May-03	0.08	0.03	0.05	0.07	0.14	0.08	0.04	0.14	0.00	0.12	0.05	0.04	-0.02
Jun-03	0.08	0.00	0.01	-0.03	0.08	0.14	-0.05	-0.02	-0.01	-0.07	0.02	0.03	0.01
Jul-03	0.05	0.03	0.02	0.05	-0.06	0.06	0.00	0.06	0.00	0.02	-0.02	-0.04	0.06
Aug-03	0.08	0.01	0.02	0.12	0.13	0.12	-0.04	0.05	0.00	0.06	-0.01	0.10	-0.01
Sep-03	-0.01	-0.01	-0.01	0.06	0.08	0.05	-0.04	-0.03	0.03	0.13	0.05	0.06	0.00
Oct-03	0.03	0.05	0.06	0.12	-0.09	0.10	-0.01	0.10	0.02	0.03	0.07	0.14	0.00
Nov-03	-0.04	0.02	0.01	0.12	0.04	0.03	0.04	0.00	0.03	0.11	0.03	0.03	0.01
Dec-03	0.06	0.03	0.05	0.10	0.06	0.16	0.07	0.07	0.02	0.00	0.00	0.04	0.02
Jan-04	0.01	-0.02	0.02	-0.02	0.07	-0.02	0.06	0.05	0.01	0.15	0.06	0.13	0.01
Feb-04	0.02	0.03	0.01	0.00	0.07	0.00	0.05	0.00	0.03	0.01	0.03	0.09	0.00
Mar-04	0.07	-0.01	-0.02	0.02	0.09	-0.01	0.04	-0.01	0.02	-0.13	0.02	-0.08	0.03
Apr-04	0.00	0.03	-0.02	-0.11	-0.13	0.01	-0.08	-0.02	0.04	-0.02	0.06	0.13	0.01
May-04	-0.04	-0.01	0.01	0.00	-0.04	-0.15	-0.02	0.00	0.03	-0.01	0.01	0.07	0.01
Jun-04	0.06	0.01	0.02	0.08	0.00	0.01	-0.09	-0.03	0.01	-0.02	0.00	0.04	0.00
Jul-04	-0.04	-0.01	-0.03	0.06	-0.06	0.08	-0.01	0.02	0.00	0.03	0.00	-0.06	0.00
Aug-04	-0.02	0.02	0.00	0.02	0.09	0.01	-0.03	0.09	0.00	0.00	-0.01	-0.12	0.00
Sep-04	-0.02	0.03	0.01	0.02	0.11	0.08	0.04	0.06	0.01	-0.01	0.03	-0.05	-0.01
Oct-04	0.00	0.01	0.02	-0.01	0.04	0.02	-0.05	-0.01	0.01	0.06	0.02	0.03	0.03
Nov-04	0.01	0.02	0.04	0.09	-0.10	0.10	0.02	0.07	0.00	0.03	0.03	0.00	-0.01
Dec-04	0.05	0.02	0.03	0.04	-0.03	0.06	-0.06	0.01	0.00	0.00	0.02	0.00	0.00
Jan-05	-0.01	0.01	-0.02	-0.07	0.04	-0.01	-0.06	0.01	0.00	0.06	0.03	-0.01	-0.01
Feb-05	0.03	0.03	0.02	0.16	0.10	0.02	0.10	0.05	0.01	0.04	0.01	-0.05	-0.01
Mar-05	0.00	-0.01	-0.02	-0.05	-0.05	-0.03	-0.10	-0.01	0.03	-0.03	0.01	-0.06	0.04

Apr-05	-0.06	-0.02	-0.02	-0.07	-0.01	-0.05	-0.02	-0.05	0.02	0.03	-0.04	0.06	0.09
May-05	0.02	0.04	0.03	0.01	0.03	0.09	-0.08	0.10	0.03	0.09	0.00	-0.03	0.03
Jun-05	0.03	0.03	0.00	-0.01	0.06	0.08	0.03	0.03	0.03	0.13	0.01	0.01	0.00
Jul-05	0.03	0.03	0.04	0.04	0.11	0.06	0.01	0.07	0.01	0.00	0.02	0.02	0.01
Aug-05	0.04	0.01	-0.01	0.08	0.12	0.02	0.08	0.02	0.02	-0.01	0.04	0.02	0.00
Sep-05	0.10	0.04	0.01	0.13	0.14	0.11	0.00	0.10	0.03	-0.03	0.09	0.10	0.02
Oct-05	0.00	-0.03	-0.02	-0.04	-0.06	-0.09	-0.05	-0.02	0.02	0.03	-0.03	0.05	0.01
Nov-05	0.09	0.03	0.04	0.06	0.12	0.11	0.01	0.02	0.01	0.01	0.01	-0.06	0.00
Dec-05	0.08	0.04	0.00	0.05	0.07	0.07	0.06	0.08	0.00	0.00	-0.02	-0.02	0.01
Jan-06	0.03	0.03	0.03	0.15	0.16	0.06	0.08	0.09	0.01	0.05	0.03	-0.01	0.04
Feb-06	-0.03	0.01	0.00	0.01	0.13	0.05	0.03	-0.03	0.04	-0.03	0.02	0.01	0.03
Mar-06	0.06	0.04	0.01	-0.02	-0.01	0.09	0.00	0.07	0.03	0.01	0.01	-0.03	0.08
Apr-06	-0.01	0.01	0.01	0.06	0.14	0.07	0.11	0.04	0.06	-0.02	-0.02	0.00	0.03
May-06	-0.09	-0.05	-0.03	-0.09	-0.13	-0.13	0.14	-0.03	0.03	0.08	-0.02	0.06	0.04
Jun-06	0.00	0.02	0.00	0.00	0.04	0.02	0.03	0.03	0.02	-0.02	0.04	0.06	-0.03
Jul-06	0.00	0.02	0.01	0.01	0.04	0.02	-0.03	-0.01	0.04	0.00	0.04	0.07	-0.01
Aug-06	0.04	0.00	0.02	-0.02	0.05	0.09	0.03	0.05	0.08	0.05	0.05	0.19	0.06
Sep-06	0.00	0.01	0.03	0.01	-0.06	0.07	0.06	0.02	0.07	0.09	0.05	-0.02	0.06
Oct-06	0.02	0.03	0.03	0.08	0.04	0.04	0.05	0.05	0.16	0.09	0.12	0.00	0.08
Nov-06	-0.01	-0.01	0.02	0.07	0.09	0.06	0.14	0.03	0.02	0.06	0.17	-0.03	0.01
Dec-06	0.06	0.03	0.01	0.06	0.09	0.01	0.27	0.04	0.01	0.01	-0.03	0.05	0.01
Jan-07	0.01	0.00	0.02	0.00	-0.02	0.02	0.04	0.02	0.04	0.02	0.04	0.11	0.10
Feb-07	0.01	0.00	-0.02	-0.02	0.00	-0.08	0.03	0.02	0.12	-0.07	0.04	0.11	0.01
Mar-07	-0.01	0.03	0.01	0.04	0.03	0.01	0.11	0.06	0.09	-0.05	0.04	0.07	0.00
Apr-07	0.01	0.02	0.04	0.07	-0.01	0.06	0.21	0.03	0.02	0.01	0.03	0.08	0.00
May-07	0.03	0.03	0.03	0.07	-0.05	0.05	0.07	0.02	0.12	-0.04	-0.03	0.04	-0.02
Jun-07	0.02	0.00	-0.02	0.04	0.06	0.01	-0.07	-0.01	0.08	0.03	0.07	0.04	-0.02
Jul-07	-0.05	-0.04	-0.03	0.00	0.04	0.06	0.17	0.01	0.03	0.04	0.03	0.03	-0.02
Aug-07	-0.04	0.00	0.01	0.01	-0.03	-0.01	0.17	0.01	0.00	0.01	-0.01	-0.06	0.02
Sep-07	0.02	0.03	0.04	0.11	0.05	0.13	0.06	0.05	0.00	-0.04	0.07	0.01	-0.01
Oct-07	0.00	0.04	0.02	0.08	0.07	0.15	0.07	0.05	-0.06	-0.03	0.12	0.00	0.03
Nov-07	-0.06	-0.04	-0.04	-0.04	-0.01	-0.02	-0.18	-0.03	-0.03	0.05	0.07	0.08	0.02
Dec-07	-0.02	0.00	-0.01	0.01	0.02	0.05	0.08	-0.04	-0.06	0.04	0.02	0.07	0.00
Jan-08	-0.11	-0.09	-0.06	-0.07	-0.17	-0.13	-0.17	-0.06	-0.02	-0.13	0.06	0.01	0.02
Feb-08	0.00	0.01	-0.03	0.07	0.05	0.00	-0.01	0.12	-0.01	0.08	0.03	0.11	0.01
Mar-08	-0.07	-0.02	0.00	-0.04	-0.02	-0.11	-0.20	-0.03	-0.01	-0.05	-0.06	-0.03	0.02
Apr-08	0.11	0.07	0.05	0.11	0.02	0.11	0.06	0.04	-0.10	0.10	-0.01	-0.06	0.10
May-08	0.04	0.00	0.01	0.07	0.17	-0.05	-0.07	0.04	-0.04	-0.03	0.01	-0.01	-0.01
Jun-08	-0.06	-0.07	-0.08	-0.10	-0.09	-0.18	-0.20	-0.04	0.04	0.00	-0.02	-0.05	0.05
Jul-08	-0.01	-0.04	-0.01	-0.08	-0.15	0.07	0.02	-0.09	0.03	-0.06	-0.05	-0.05	0.00

Aug-08	-0.02	0.05	0.01	-0.06	-0.10	0.02	-0.14	0.00	0.04	-0.05	-0.04	-0.10	0.09
Sep-08	-0.13	-0.13	-0.09	-0.11	-0.24	-0.12	-0.04	-0.13	0.10	-0.10	-0.05	-0.03	0.01
Oct-08	-0.24	-0.11	-0.17	-0.25	-0.29	-0.24	-0.25	-0.12	-0.01	-0.19	-0.14	-0.21	-0.09
Nov-08	-0.01	-0.01	-0.07	-0.02	-0.16	-0.07	0.08	0.01	-0.06	0.00	-0.12	-0.09	-0.03
Dec-08	0.04	0.04	0.01	0.03	0.01	0.06	-0.03	0.02	-0.10	0.04	0.02	-0.05	-0.02
Jan-09	-0.10	-0.06	-0.08	0.05	0.01	-0.02	0.09	-0.04	-0.03	-0.09	-0.04	-0.31	0.03
Feb-09	-0.05	-0.07	-0.11	-0.03	0.07	-0.06	0.05	-0.10	-0.04	-0.23	-0.18	0.07	0.02
Mar-09	0.08	0.03	0.09	0.07	0.16	0.09	0.14	0.11	0.00	0.13	0.15	-0.15	0.01
Apr-09	0.09	0.09	0.10	0.16	0.19	0.17	0.04	0.02	-0.04	0.00	0.06	0.08	0.09
May-09	0.08	0.05	0.06	0.12	0.24	0.28	0.06	0.10	-0.01	0.01	0.15	0.39	0.01
Jun-09	0.05	-0.03	0.00	-0.03	-0.14	-0.01	0.13	-0.03	0.03	0.15	0.10	-0.12	0.09
Jul-09	0.04	0.09	0.08	0.06	0.08	0.08	0.15	0.10	0.03	-0.01	0.05	-0.04	-0.01
Aug-09	0.01	0.07	0.04	0.03	0.04	0.00	-0.22	0.03	0.05	-0.05	0.01	-0.09	0.04
Sep-09	-0.03	0.05	0.04	0.09	0.10	0.09	0.04	0.00	0.03	-0.03	0.12	-0.04	0.08
Oct-09	-0.01	-0.02	-0.02	0.00	0.03	-0.07	0.08	0.06	0.02	0.03	0.02	-0.01	0.00
Nov-09	-0.07	0.04	0.06	0.09	0.04	0.07	0.07	0.02	0.07	0.03	-0.02	-0.04	0.01
Dec-09	0.13	0.04	0.02	0.02	0.07	0.03	0.03	0.03	-0.03	0.02	0.02	-0.01	0.04
Jan-10	-0.03	-0.04	-0.04	-0.05	0.04	-0.06	-0.09	-0.03	0.01	0.10	0.05	0.09	0.09
Feb-10	-0.01	0.04	0.03	0.02	-0.07	0.00	0.02	0.00	0.05	0.02	-0.05	0.02	0.00
Mar-10	0.10	0.07	0.06	0.06	0.10	0.07	0.02	0.08	-0.02	0.12	0.00	0.13	0.00
Apr-10	0.00	-0.02	0.02	-0.04	-0.01	0.00	-0.08	0.00	0.01	0.04	0.03	0.03	0.04
May-10	-0.12	-0.06	-0.08	-0.07	-0.05	-0.03	-0.09	-0.05	-0.03	0.00	-0.04	-0.01	0.02
Jun-10	-0.04	-0.05	-0.05	-0.03	-0.02	0.05	-0.07	-0.03	0.01	0.02	0.03	-0.03	0.00
Jul-10	0.02	0.07	0.07	0.11	0.07	0.01	0.10	0.08	0.02	0.02	0.04	0.02	0.05
Aug-10	-0.07	0.00	-0.05	-0.04	-0.02	0.01	0.00	-0.04	-0.01	0.00	0.00	-0.06	0.04
Sep-10	0.07	0.06	0.09	0.07	0.05	0.12	0.01	0.09	0.00	0.04	0.03	-0.05	0.06
Oct-10	-0.02	0.02	0.04	0.02	0.06	0.00	0.12	0.04	0.00	0.01	0.06	0.09	-0.10
Nov-10	0.08	-0.02	0.00	-0.04	0.03	-0.03	-0.05	0.00	-0.03	-0.06	0.03	-0.01	0.03
Dec-10	0.03	0.07	0.07	0.02	0.08	0.05	0.00	0.06	-0.10	0.01	0.03	0.00	-0.03
Jan-11	0.00	-0.01	0.02	-0.04	0.02	-0.11	-0.01	-0.02	0.06	0.01	0.03	0.08	-0.13
Feb-11	0.04	0.03	0.03	0.01	0.03	-0.03	0.04	0.03	0.02	-0.05	0.00	-0.03	-0.08
Mar-11	-0.07	-0.01	0.00	0.02	0.02	0.09	0.01	0.01	0.01	-0.08	-0.01	-0.05	0.08
Apr-11	0.01	0.03	0.03	-0.04	-0.04	-0.02	-0.01	0.02	0.01	0.04	0.03	0.03	-0.03
May-11	-0.02	-0.01	-0.01	-0.02	-0.03	-0.03	-0.06	-0.01	0.01	0.01	0.01	0.04	-0.03
Jun-11	0.01	0.00	-0.02	-0.03	0.00	0.02	0.02	-0.02	0.02	-0.03	0.01	-0.03	0.05
Jul-11	0.00	-0.02	-0.02	-0.06	0.02	-0.03	-0.02	-0.02	0.03	-0.06	-0.03	-0.05	0.04
Aug-11	-0.09	-0.07	-0.05	-0.04	-0.09	-0.08	-0.05	0.00	0.02	-0.07	-0.03	-0.10	0.02
Sep-11	-0.02	-0.05	-0.07	-0.07	-0.12	-0.01	-0.08	-0.04	-0.02	-0.05	-0.02	-0.05	0.04
Oct-11	0.03	0.08	0.11	0.11	0.10	0.08	0.05	0.09	-0.02	0.07	-0.01	0.03	0.00
Nov-11	-0.06	0.00	0.00	-0.03	0.00	-0.09	-0.05	0.02	0.00	-0.10	-0.01	-0.04	0.00

Dec-11	0.00	0.01	0.01	0.00	-0.06	-0.04	-0.06	-0.02	0.00	0.02	0.01	0.04	0.01
Jan-12	0.04	0.02	0.04	0.11	0.08	0.11	0.04	0.06	0.00	0.01	-0.03	0.01	-0.01
Feb-12	0.11	0.04	0.04	0.04	0.06	0.03	0.06	0.02	0.00	0.03	-0.03	-0.04	0.02
Mar-12	0.05	-0.01	0.03	-0.02	-0.05	-0.02	-0.07	-0.01	0.02	0.05	0.02	0.04	0.01
Apr-12	-0.06	0.00	-0.01	-0.04	-0.03	0.00	0.06	0.03	0.04	0.07	0.00	0.08	0.06
May-12	-0.10	-0.07	-0.06	-0.12	-0.09	-0.06	-0.01	-0.04	0.01	0.03	0.01	0.00	-0.01
Jun-12	0.06	0.05	0.04	0.00	0.06	0.08	-0.05	0.02	0.01	0.01	-0.02	-0.02	-0.01
Jul-12	-0.03	0.01	0.01	0.03	0.01	-0.01	-0.05	0.03	0.01	0.04	-0.01	0.07	0.06
Aug-12	0.02	0.02	0.02	0.02	0.01	0.01	-0.03	0.03	0.00	0.01	-0.04	0.03	0.00
Sep-12	0.01	0.01	0.03	0.04	0.03	0.08	0.02	0.02	0.01	0.04	0.01	0.10	-0.05
Oct-12	0.01	0.01	-0.02	-0.04	-0.02	-0.01	-0.01	0.04	0.03	0.04	-0.01	0.02	-0.01
Nov-12	0.06	0.02	0.01	0.01	-0.01	0.05	-0.04	0.03	0.01	-0.02	0.01	0.00	-0.05
Dec-12	0.10	0.01	0.01	0.06	0.05	0.01	0.15	0.03	-0.01	0.01	0.03	0.06	-0.02
Jan-13	0.07	0.07	0.05	-0.02	0.05	0.02	0.05	0.03	0.04	0.07	0.04	0.13	0.04
Feb-13	0.04	0.02	0.01	-0.04	-0.04	-0.05	-0.01	-0.02	0.02	0.02	0.04	0.04	-0.03
Mar-13	0.08	0.01	0.04	-0.02	-0.03	0.00	-0.05	0.01	0.06	0.08	0.03	0.02	0.02
Apr-13	0.12	0.01	0.02	-0.01	-0.03	0.04	-0.03	-0.02	0.05	0.01	-0.01	0.01	-0.02
May-13	-0.01	0.03	0.02	-0.04	0.00	0.02	0.06	0.09	0.00	0.05	0.02	0.14	-0.01
Jun-13	-0.01	-0.05	-0.01	-0.11	-0.01	-0.02	-0.12	-0.06	0.00	-0.08	-0.01	-0.04	0.01
Jul-13	0.00	0.07	0.05	0.02	0.03	0.00	0.01	0.04	0.00	0.04	-0.02	0.05	-0.01
Aug-13	-0.02	-0.02	-0.03	0.04	0.00	-0.04	0.05	0.03	-0.02	-0.02	0.03	-0.04	0.02
Sep-13	0.09	0.01	0.03	0.05	0.07	0.04	0.04	0.05	0.01	0.02	0.02	0.01	-0.03
Oct-13	-0.01	0.04	0.05	0.04	0.03	0.09	-0.02	0.04	0.03	0.04	0.04	0.03	0.01
Nov-13	0.09	-0.01	0.03	-0.03	-0.02	-0.02	0.04	-0.01	0.02	0.02	0.00	0.03	0.00
Dec-13	0.04	0.02	0.03	-0.02	0.02	0.02	-0.05	0.03	0.02	-0.03	0.03	0.06	-0.02
Jan-14	-0.08	-0.03	-0.03	-0.08	-0.03	-0.03	-0.04	-0.02	0.04	-0.01	0.00	-0.02	0.03
Feb-14	0.00	0.05	0.05	-0.01	-0.01	0.03	0.01	0.05	-0.03	0.02	-0.01	-0.02	0.05

Appendix C

Index Descriptions

Developed Market (DM)	
Japan: NKY	The Nikkei 225 Stock Average Index is Japan's price-weighted average of the 225 top-rated companies listed on the Tokyo Stock Exchange. It was first published on May 16, 1949 ("Markets").
United Kingdom: UKX	The FTSE 100 Index is a capitalization weighted index developed on December 30, 1983. It is composed of the London Stock Exchange's 100 most highly capitalized companies ("Markets").
United States: SPX	The Standards and Poor's 500 (S&P 500) Index is a capitalization-weighted index. It is composed of 500 stocks representing all major US industries and measures the performance of the domestic economy based on changes in the aggregate value of the listed stocks ("Markets").
Emerging Market (EM) BRICS	
Brazil: IBOV	The Ibovespa Brazil Sao Paulo Stock Exchange Index is a gross total return index. It is comprised of the most liquid stocks traded on the Sao Paulo Stock Exchange ("Markets").
Russia: INDEXCF	The MICEX Index is a capitalization-weighted composite Index that was launched on September 22, 1997. It is comprised of the 50 most liquid Russian stocks on the Moscow Exchange ("Markets").
India: SENSEX	The S&P BSE SENSEX Index, or Bombay Stock Exchange Sensitive Index, is a capitalization-weighted index. Members are selected based on liquidity, depth, floating-stock-adjustment depth, and industry representation ("Markets").
China: SHCOMP	The Shanghai Stock Exchange Composite Index is a capitalization-weighted index that was developed on December 19, 1990. It tracks the daily prices performance of all A-shares

	and B-shares listed on the exchange (“Markets”).
South Africa: JALSH	The FTSE/JSE Africa All Share Index is a market capitalization-weighted index that includes the top 99% of the total pre-free float-market capitalization of the companies listed on the Johannesburg Stock Exchange (“Markets”).

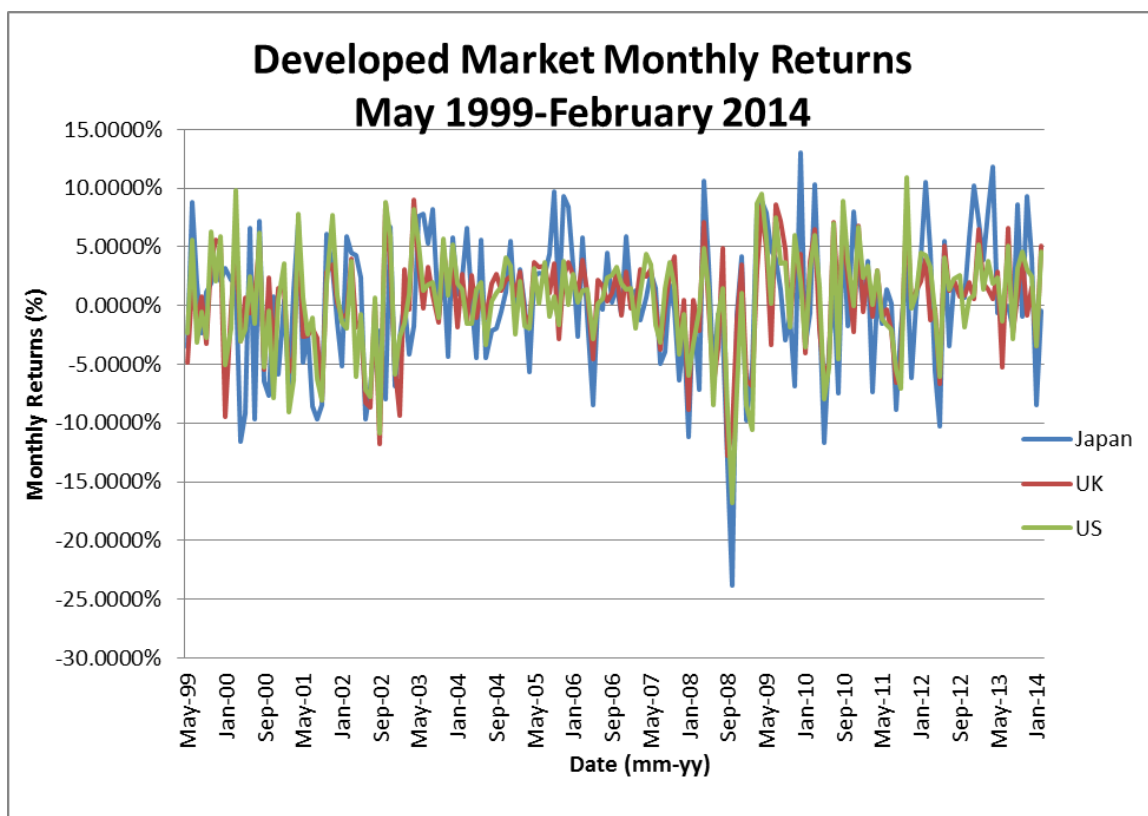
Frontier Markets (FM) of Africa

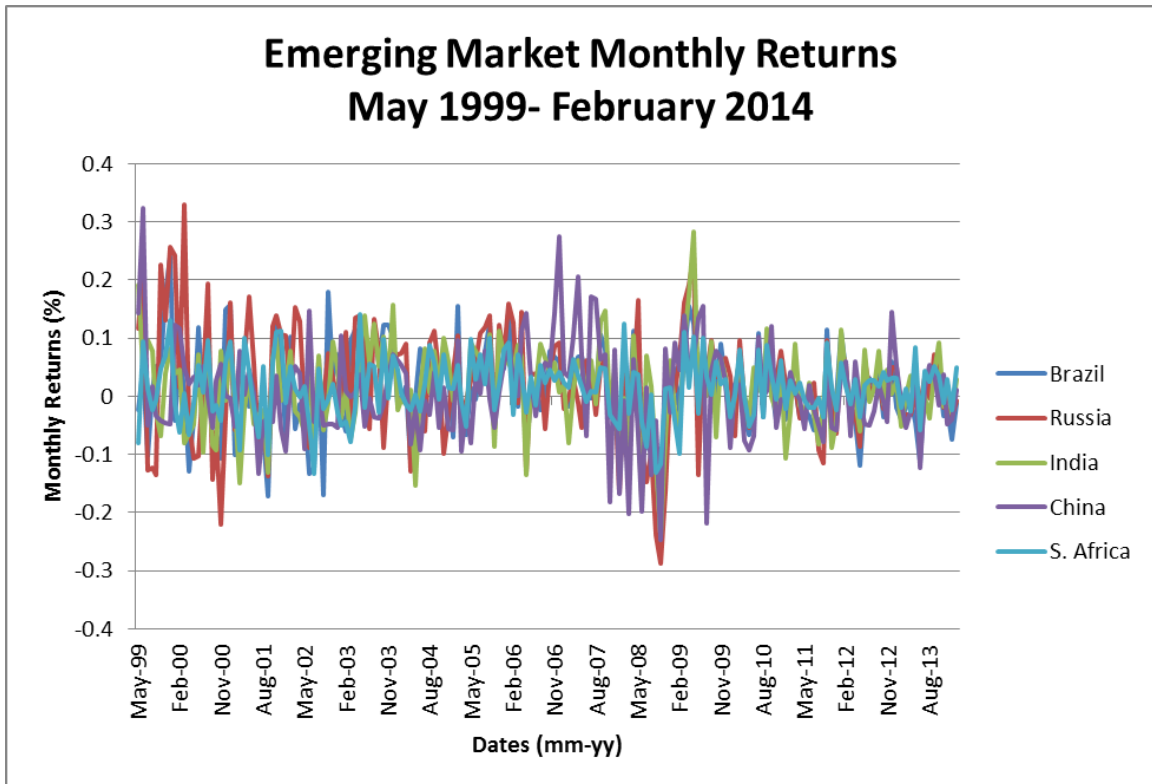
Botswana: BGSMDX	The Botswana Domestic Companies Index in comprised of companies traded in Botswana. In order to calculate the price of the index, the weighted arithmetic average of the current prices of the shares to the average of their starting price is calculated (“Markets”).
Kenya: KNSMIDX	The Nairobi Securities Exchange Ltd 20 Share Index is a price-weighted index. The members that are included are chosen based on a weighted market performance over a 12 month period, The performance weightings are 40% Market Capitalization, 30% Shares Traded 20% Number of Deals, and 10% Turnover (“Markets”).
Mauritius: SEMDEX	The Mauritius Stock Exchange SEMDEX Index is a capitalization weighted index. The index includes all of the shares traded on the Mauritius Stock Exchange (“Markets”).
Nigeria: NGSEINDX	The Nigerian Stock Exchange All Share Index was created in January of 1984. The index is value-relative and is computed daily. Only ordinary shares are included in the index computation (“Markets”).
Tunisia: TUSISE	The Tunis Stock Exchange TUNINDEX is a capitalization-weighted index that was launched on December 31, 1997. It is comprised of equities from the Tunis Stock Exchange (“Markets”).
Ghana: (N/A)	The Ghana Stock Exchange Composite Index (GGSECI Bloomberg ticker) is a market capitalization weighted index. The index includes all ordinary shares listed on the Ghana Stock Exchange, except for the companies that have shares listed on other markets as well (“Markets”). However, this index was not included in the study due to lack of sufficient data.

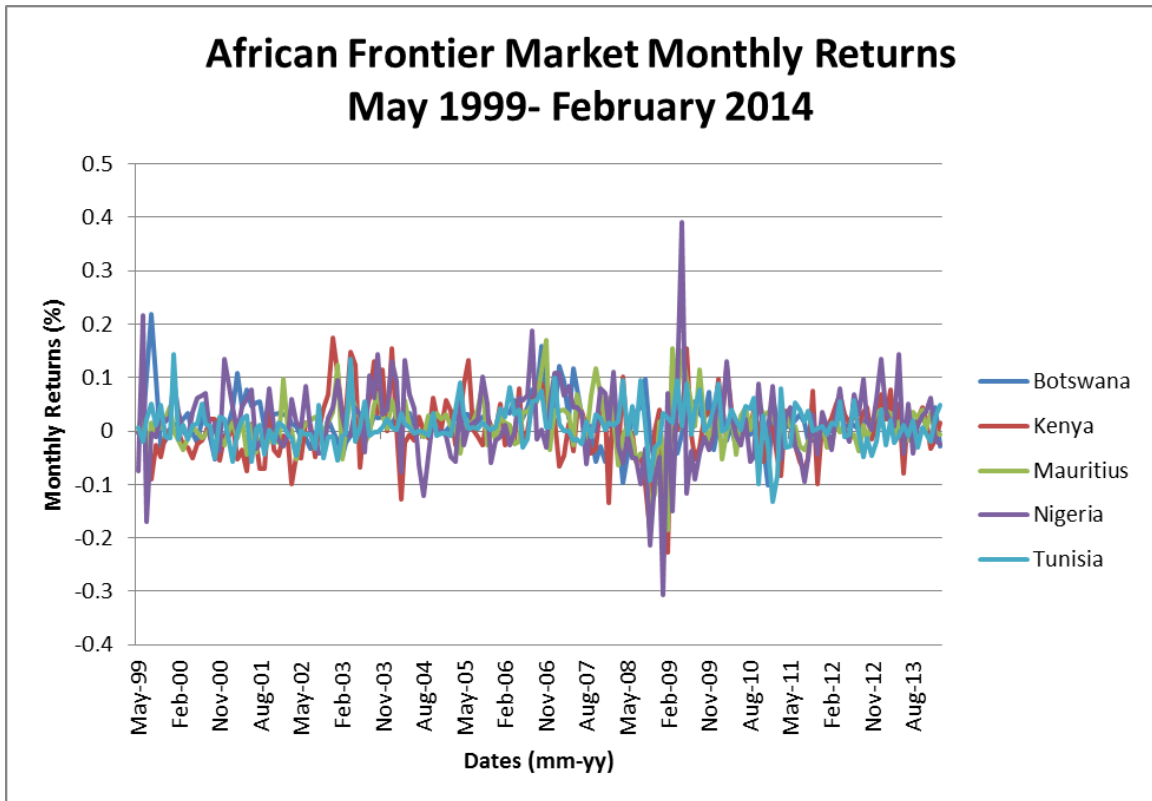
Morocco: (N/A)	The Morocco Casablanca Stock Exchange CFG 25 Index (MCSINDEX) is a price-only market capitalization weighted index. It is comprised of 25 stocks listed on the Casablanca Stock Exchange and 84% of the total market capitalization of all the companies listed on the exchange. The stocks selected closely represent the wide range of industries of all the listed companies (“Markets”).
Zimbabwe: (N/A)	Zimbabwe has two indexes, the Industrial Index and the Mining Index, but these were not included in the study due to lack of sufficient evidence. The Industrial Index comprises every company except for mining companies. The Mining Index is comprised of four mining companies (“Zimbabwe Stock Exchange Indices”).

Appendix D

Monthly Returns Volatility Graphs







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