

Exploring the Early-Stage Frontier Markets

An overview of the most neglected equity markets

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Global institutional investors will be familiar with the discourse of equity index changes. Over time, markets develop and are upgraded to emerging or developed market status. Some markets face new challenges and are downgraded. Yet the first stage of market evolution is typically ignored by international investors. While some markets graduate and leave the frontier or emerging market universe, new markets are being created nearly every year. This paper seeks to describe the characteristics of the early-stage frontier markets, those countries excluded from even the frontier market equity indices.

Defining the Universe

Standard and Poor's includes 25 countries in its developed market index, and 22 countries in its emerging market's index. This leaves 92 countries with stock markets that are not included in these indices, and these markets form the broad definition of frontier emerging markets. Several countries are included in this list because they have a listing on a regional stock exchange, such as the BRVM in West Africa or the ECSE in the Eastern Caribbean. There are currently 195 independent countries recognized by the US State Department, plus Taiwan, which is not recognized for political reasons but is effectively an independent nation. This means that there are currently 57 countries that lack their own stock exchange. While many of these countries are very small, some countries without stock markets have relatively large populations, such as Ethiopia, the DR Congo, and Cambodia.

Having your own stock market may seem to be a trivial issue in today's world of high-tech interconnectivity and frequent cross-border capital flows, but a nation's domestic stock market is often viewed by the local populace as a political symbol of independence and economic development. Having your own stock market is often a matter of pride. While we may never reach a time when all the countries in the world have their own market, and regional market integration may become more prevalent, new stock exchanges are created almost every year. In 2011, new markets began trading in Laos and Rwanda. New stock exchanges are currently being planned in Angola, Cambodia, Ethiopia, and Kurdistan (northern Iraq), among others.

In Exhibit 1, the frontier market countries that are included in either the S&P Frontier BMI or the MSCI Frontier Market Index are shown in bold.

Exhibit 1. List of the Frontier Markets, those countries excluded by the emerging and developed indices

<i>Europe</i>	<i>Latin America</i>	<i>Sub-Saharan Africa</i>	<i>MENA</i>	<i>Asia</i>
Armenia	Argentina	Benin	Algeria	Bangladesh
Azerbaijan	Bahamas	Botswana	Bahrain	Bhutan
Belarus	Barbados	Burkina Faso	Iran*	Kazakhstan
Bosnia	Bermuda	Cameroon	Iraq	Kyrgyz Rep.
Bulgaria	Bolivia	Cape Verde	Jordan	Laos
Croatia	Cayman Islands	Cote d'Ivoire	Kuwait	Maldives
Estonia	Costa Rica	Ghana	Lebanon	Mongolia
Georgia	<i>Dominica</i>	Kenya	Libya	Myanmar
Latvia	Ecuador	Malawi	Oman	Nepal
Lithuania	El Salvador	Mauritius	Palestine	Pakistan
Macedonia	<i>Grenada</i>	Mozambique	Qatar	P. New Guinea
Malta	Guyana	Namibia	Saudi Arabia	Fiji
Moldova	Jamaica	Niger	Sudan*	Sri Lanka
Montenegro	Panama	Nigeria	Syria	Uzbekistan
Republika Srpske	St. Kitts and Nevis	Rwanda	Tunisia	Vietnam
Romania	<i>St. Lucia</i>	Senegal	UAE	
Serbia	Trinidad and Tobago	Swaziland		
Slovakia	Uruguay	Tanzania		
Slovenia	Venezuela	<i>Togo</i>		
Ukraine		Uganda		
		Zambia		
		Zimbabwe		

For the purposes of this paper, countries that lack their own stock exchange but that have a domiciled company with a depository receipt listed on another stock exchange are excluded from our analysis. There are several more countries that could be included in the frontier category if DR's are included. Junior resource firms with operations in exotic markets and listings on developed country stock markets are common. However, these listings often tend to behave more like emerging or developed market stocks due to their greater liquidity and inherent integration with the global primary stock exchanges. Additionally, there are countries not included in the above list where joint stock and bond exchanges exist, but where there are currently no publicly listed equities.

Within the frontier market category, markets vary substantially across the spectrum of development. Some markets, such as Kuwait, the UAE, and Qatar offer emerging-like levels of liquidity and market size. Others, such as Ghana and Bulgaria, trade less than \$5 million a month. The primary index providers, S&P and MSCI have developed frontier market indices comprised of countries excluded by their developed and emerging indices that meet a minimum level of size and liquidity. Even within these indices, particularly in the S&P Frontier BMI, there are some markets that appear to be at an early stage of development due to their low size and liquidity. Some of the smaller constituents of the S&P Frontier BMI do share characteristics with early-stage frontier markets in terms of their market size, liquidity, and correlation to other markets. The Standard and Poor's frontier index and its country constituents were born of the International Finance Corporation's (IFC) earlier frontier indices which focused on providing long data histories and broad exposure as opposed to creating marketable index products. As S&P took over the earlier IFC indices, the S&P Frontier BMI is the broader of the two main frontier indices and tracks 41 countries. 12 of the markets that are included in the S&P Frontier BMI are presently excluded by MSCI's more widely followed MSCI Frontier Market Index due to a failure of these markets to reach MSCI's lower criteria for inclusion in the frontier index. These markets include: Botswana, Cote d'Ivoire (BRVM), Cyprus, Ecuador, Ghana, Jamaica, Latvia, Namibia, Panama, Slovakia, Trinidad & Tobago, and Zambia. These markets could be considered to be part of the early-stage frontier universe, and they are indeed neglected from the portfolios of most emerging and even frontier market investors.ⁱⁱ

However, for the sake of easy definition, we will define as early-stage or neglected frontier markets, those countries with local stock exchanges that are excluded by *both* the S&P Frontier BMI and the MSCI Frontier Market Index. The broader of the two, the S&P Frontier BMI contains 37 markets, and 41 countries, leaving 51 countries excluded by both indices. In order to examine the characteristics of these excluded markets, an index has been constructed of 34 of these stock markets, covering 37 countries excluded by the main index providers, which we call the Neglected Frontier Index.ⁱⁱⁱ The country constituents of the Neglected Frontier Index are given in Exhibit 2 along with the current and historical average country member weights in the index.

Exhibit 2. Country Weights in the Neglected Frontier Index – 11/30/2011

Country	11/30/2011	Average: 2000-Present
Bosnia & Herzegovina	5.9%	4.3%
Palestine (West Bank)	5.9%	9.7%
Venezuela	5.9%	2.1%
Zimbabwe	5.9%	1.2%
Malta	5.9%	12.3%
Bermuda	5.2%	11.4%
El Salvador	4.9%	2.1%
Republika Srpske	4.8%	3.9%
Costa Rica	4.8%	9.8%
Iraq	4.7%	3.2%
Barbados	4.6%	3.7%
Bahamas	4.0%	3.6%
Uganda	3.8%	1.5%
Malawi	3.8%	2.9%
Tanzania	3.8%	1.7%
Macedonia	3.3%	2.9%
Georgia	3.0%	1.9%
Mongolia	2.7%	0.8%
Papua New Guinea	2.2%	1.8%
Nepal	1.8%	5.7%
Fiji (South Pacific)	1.6%	0.9%
Montenegro	1.6%	2.3%
Guyana	1.6%	0.8%
Paraguay	1.6%	0.5%
Bhutan	1.4%	1.8%
Syria	1.0%	0.4%
Eastern Caribbean (ECSE)	1.0%	1.2%
Uruguay	0.9%	0.5%
Cayman Islands	0.7%	0.3%
Cape Verde	0.6%	0.2%
Moldova	0.6%	0.8%
Maldives	0.4%	0.9%
Uzbekistan	0.3%	1.2%
Armenia	0.1%	0.1%
Panama	0.0%	1.2%

In early stage markets, market capitalization can change dramatically depending on how and when major companies are privatized or listed. In order to avoid this distortion, and to prevent over concentration in particular countries, the Neglected Frontier Index has been constructed utilizing a maximum country-level weight constraint equal to $2 \cdot 1/n$ (where n are the number of countries in the index at that point of time).^{iv} Country-weight constraints have been utilized by Russell in their Frontier Index, as well as by others to present a universe more closely tailored to how an active investor would construct a portfolio designed to minimize portfolio-level risk.^v Most frontier investors are unlikely to seek out as heavy a concentration in any one country as provided by the market-capitalization weighted indices. For example, using strict market capitalization weights would result in an average index weight of 18.7% in the tiny island nation of Malta during the period in study.

While it is the aim of the Neglected Frontier Index to represent the total universe of markets excluded by the major index providers, several exceptions have been made. Iran, Myanmar, Saudi Arabia, and the Sudan have been excluded from the index because investors based in the United States and several other countries are prohibited from investing in these countries.^{vi} Some countries in this category, like Saudi Arabia, would be admitted to the standard frontier indices if these restrictions were lifted. Libya has been excluded because of prohibitive capital controls, and the stock market has been closed since the onset of political violence in January of 2011. Iceland has been excluded from the index due to its imposition of controls on foreign exchange that would preclude many international investors. Algeria, Azerbaijan, Bolivia, Cameroon, the Kyrgyz Republic, Mozambique and Swaziland were excluded from the index due to a lack of publicly available data or insufficient trading activity within the last 3 years. Laos and Rwanda have yet to be included in the index because they were created in 2011 and they had not yet produced 12 months worth of data as of publication. Zimbabwe was only included in the index following the dollarization of the economy which occurred in early 2009. The extreme hyper-inflation which occurred in Zimbabwe prior to this period makes return data so volatile that it would have undue influence on the overall index if included prior to dollarization.^{vii}

These exceptions may introduce a degree of survivorship bias to the index, as countries excluded from the index due to present investor restrictions, a lack of trading activity, or a lack of current publicly available data may tend to have been underperformers during the period of study. With the unique exception of Zimbabwe, the attempt has been made to mitigate backwards looking biases by determining the country constituents of the index at every point in time based on when they were included or excluded in the two major frontier indices. For example, Venezuela was only added following its removal by both S&P and MSCI Emerging Market Indices in May of 2007. Panama was removed as a member of the Neglected Frontier Index upon its addition to the S&P IFC Frontier Market Composite in January of 2008.

Geographic and Sector Exposures

The early-stage frontier markets, as represented by the Neglected Frontier Index, provide exposure to regions and countries that are largely absent from the frontier, emerging, and developed market indices. At the regional level, the early-stage frontier market's largest weight is in Latin America at 35.0%. This exposure is larger than either of the standard frontier or emerging market indices. The next greatest regional components of the Neglected Frontier Index are Eastern Europe and the CIS countries with 25.1% and Sub-Saharan Africa with 17.9%. The most noticeable difference between the Neglected Frontier Index and the MSCI and other standard frontier indices is that the heavy weight in the Persian Gulf is absent from the Neglected Frontier Index. The large market capitalization countries of Kuwait, Qatar, and the UAE are currently under review for upgrade to emerging market status by both MSCI and S&P, and these three markets currently contribute a heavy weight of 39.1% to the S&P Frontier BMI.^{viii} The MENA region has the second lowest weight in the Neglected Frontier Index, with Palestine, Iraq, and Syria contributing only 11.6%. It is worth noting that the Neglected Frontier Index is less concentrated in any one region than both the S&P IFCI emerging markets index (60.3% of the index is in Asia) and the S&P Frontier BMI (50.2% of the index is in MENA). Exhibit 3 summarizes the different geographic exposures of the emerging, standard frontier, and Neglected Frontier indices.

Exhibit 3. Regional Exposures of the emerging, frontier, and Neglected Frontier Indices – 11/30/2011

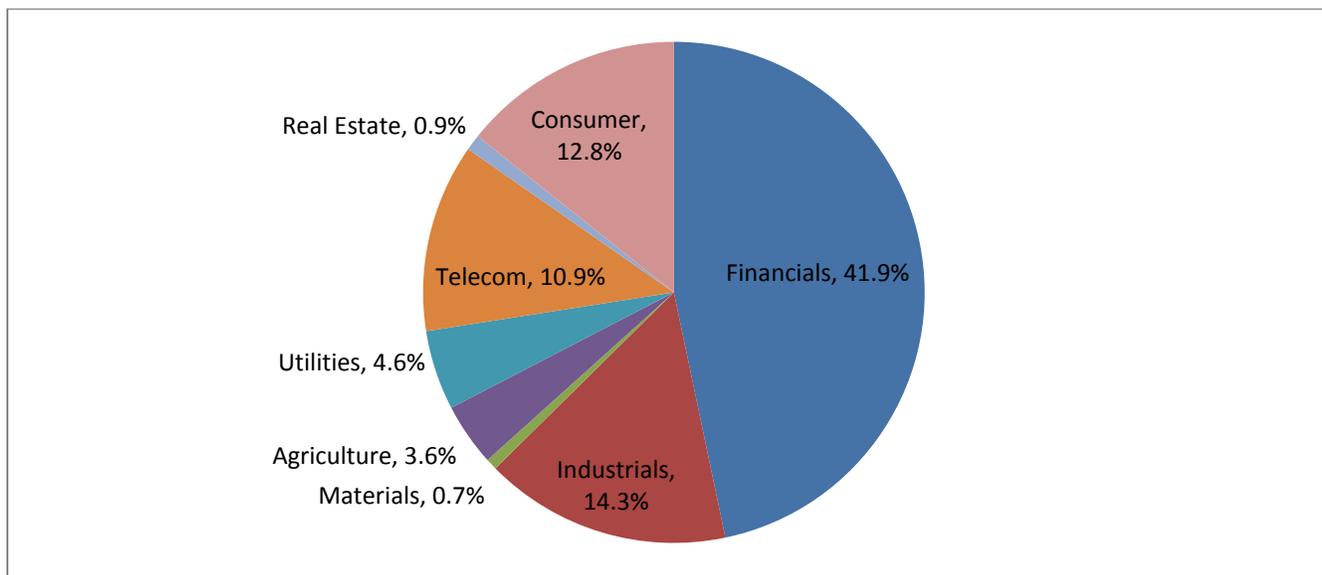
	S&P IFCI (Emerging Markets)	S&P Frontier BMI	Neglected Frontier Index
SS Africa	6.6%	13.6%	17.9%
Asia	60.3%	10.2%	10.4%
Europe/CIS	10.1%	14.4%	25.1%
Latin America/Caribbean	22.4%	11.5%	35.0%
MENA	0.6%	50.2%	11.6%

**The region with the largest weight is marked in bold for each index.*

At the sub-regional level, the Neglected Frontier Index provides geographic exposures unique among equity indices. The South Pacific and the Caucasus region are two sub-regions present in the Neglected Frontier Index but absent from both the S&P Frontier BMI and the MSCI Frontier Market Index. Additionally, the Caribbean, Central America, and South and Central Africa are three sub-regions present in the Neglected Frontier Index but absent from the MSCI Frontier Market Index. Both the standard frontier indices and the early-stage frontiers provide sub-regional exposures absent from the main emerging and developed market indices.^{ix} South Africa is the only country constituent of the emerging market indices that is present in one of the aforementioned sub-regions.

The sector exposures of the Neglected Frontier Index are similar to that of the standard frontier indices. Financial stocks are by far the largest sector, and financials currently comprise 41.9% of the index. While the majority of the companies in this category are commercial banks, this category also includes a number of insurance companies and microcredit banks. Banks are often the first companies to list in nascent public equity markets. Bank managers are more likely than other company’s management to have the prerequisite knowledge and experience working with capital markets. Banks also tend to have above-average capital requirements in order to reach the scale needed to achieve profitability. While the heavy concentration in financial stocks may be viewed as a source of potential volatility in the frontier markets, banks in the early-stage frontier markets tend to follow the traditional banking business model of raising deposits and making loans. Banks in the early-stage frontiers receive a greater portion of their funds through deposits and utilize less leverage than banks in more developed markets.^x

Exhibit 4. Sector Weights of the Neglected Frontier Index – 11/30/2011



Another of the larger sectors in the index is telecommunications, which also tends to have a high weight in the main frontier market indices. Mobile telecommunications firms in particular have been broadly successful in penetrating some of the poorest countries in the world. Mobile minutes and SMS are often the destination for some of the first discretionary incomes earned by the low and middle income segments in developing countries. The low weights of agricultural and materials firms in the Neglected Frontier Index may come as a surprise to some, but many of the large producers of natural resources in the early-stage markets are seen as national, strategic assets, and are largely state-owned. Despite the importance of commodity exports to the economic model of many of the countries in the index, the Neglected Frontiers Index has historically had a relatively low correlation to commodities prices.^{xi}

Economic Growth in the Early-Stage Markets

While many frontier market countries would be categorized as low income, several of the Persian Gulf countries with the largest weights in the main frontier indices tend to be quite wealthy. While the median 2011 GDP per capita of the countries in the S&P Frontier BMI is only \$8,593, the index weighted GDP per capita is an

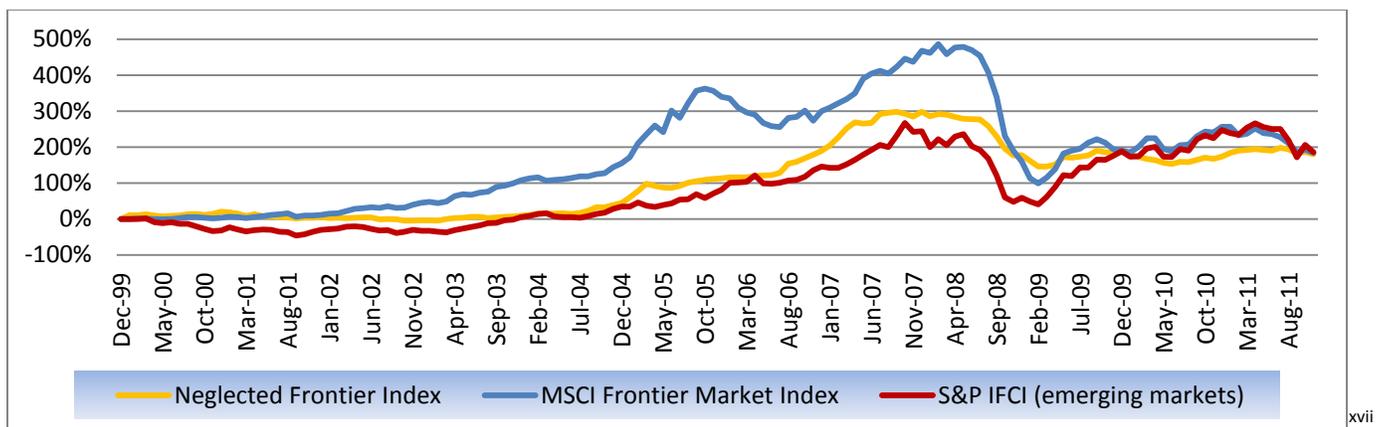
impressive \$30,832 due to the large weight of the wealthy Persian Gulf countries in the index. The Neglected Frontier Index lacks these small-but-wealthy states, and as a result, has a much lower index-weighted GDP per capita of \$6,558. The median GDP per capita of the Neglected Frontier Index countries is only \$3,831. It is less the case in the Neglected Frontier Index that some markets tend to be early-stage because their populations are small, as has been identified in the standard frontier markets.^{xii} In the standard frontier indices, there are small-population high income countries like Kuwait, and Qatar, and the UAE, and there are high-population, low-income countries like Nigeria, Pakistan, Bangladesh, and Vietnam. In contrast, most of the Neglected Frontier Index countries are both poor and have small populations relative to the emerging and developed markets. The median population among the Neglected Frontier Index countries is only 2.06 million.^{xiii} Only six of the Neglected Frontier Index countries have populations greater than 20 million, and these are Tanzania, Uganda, Iraq, Venezuela, Uzbekistan, and Syria.

It may be partially the result of a lack of past development itself that less developed economies are expected to achieve rapid economic growth in coming years. Lower wage rates, lower domestic commodity demand, and the current lack of certain technologies may all contribute to this effect, in which countries coming from a lower base tend to grow faster. It has been noted that the standard frontier markets present in the main indices are forecast to achieve economic growth that is similar to that of the larger emerging markets over the next five year period.^{xiv} The IMF forecasts the median frontier market to grow its GDP in USD real terms by 4.6% per year over the next 5 years, and that can be compared to 4.6% for the larger emerging markets. The developed market economies are forecast to grow roughly half of that, at 2.2% per year. The Neglected Frontiers, which tend to be even less developed, are forecast to grow at a similar pace to the standard frontier and emerging markets, as the median IMF forecast over the next five years is 4.5%. Interestingly, the five-year, median GDP growth estimate for the six countries that either launched stock exchanges in 2011 or are planning to launch in 2012 is a much higher 7.3%.

Historical Stock Market Returns

The Neglected Frontier Index, though not a perfect measure of the total universe of markets excluded by the standard frontier indices, can be used to illustrate the long-run, historical performance of this excluded sub-asset class of markets. Over the nearly twelve year period beginning 01/01/2000 and ending 11/30/2011, the Neglected Frontier Index returned 5.83% per year. One important limitation of the data is that at the beginning of this study period, data was only available for 8 of the 35 markets, however by late 2002 the index included 13 markets, and by late 2004 the index included 26 markets. Another significant limitation of the Neglected Frontier Index data is that it is a price index only, and does not include the impact of dividends that would be necessary to compute a more meaningful total returns index. This would be an important area for further study if this data becomes more readily available. In an effort to estimate the long-run average total return of the early-stage frontiers, an estimate of the annual dividend yield can be added to this price return. Over the last three years, the dividend yield average for those countries where data is available has been 3.19%.^{xv} Adding this imperfect dividend yield estimate to the ten year price returns, we arrive at an estimate of the ten year total return for the Neglected Frontier Index of 9.21%.^{xvi} This return can be compared to the MSCI Frontier Market Index return of 9.15% over the same period, and the S&P IFCI (emerging markets) index return of 9.21%. Exhibit 5 illustrates the returns trajectory of these three indices from January 2000 to present.

Exhibit 5. Cumulative Returns of the Neglected Frontier Index, MSCI Frontier Index, and S&P IFCI (emerging) Index



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Most early-stage equity markets receive limited investment from foreigners. This is often a result of the early-stage markets small size, relatively low levels of liquidity, high levels of perceived risk, as well as market regulatory policies that make account setup prohibitively time consuming or costly. The low level of integration of the early-stage markets means that most investors are local, and that they are generally unable or unwilling to invest in the assets of other countries. This means that investors in early-stage markets are likely to require an elevated risk premium when purchasing assets in these markets in order to compensate for the high individual volatility caused by what would otherwise be diversifiable country-specific risk. Required rates of return may be set unduly high in early-stage frontier markets by local investors that are unable to diversify away country specific risk. This results in market valuations being lower in the early-stage frontier markets than in other market categories relative to a company's ability to generate earnings, cash flows or the book value of equity. As of the end of November, the average Price to Earnings valuation metric of the countries in the Neglected Frontier Index was 9.9x, and this can be compared to the P/E ratio of 11.0x in the standard frontier markets, and 13.2x in the larger emerging markets and the MSCI World Index.^{xviii} While more study regarding risk premiums and long-run returns in the neglected markets is warranted, initial studies of the standard frontier markets have supported this view that less developed equity markets offer higher risk premiums and long-run average returns.^{xix}

In addition to providing intriguing historical returns, some neglected frontiers behave inefficiently even by the weak-form efficient market hypothesis, and this may present alpha-generation opportunities to active portfolio managers. Especially in the less liquid frontier markets, it can be common for arbitrage opportunities to exist due to inefficient market pricing of transferable depository receipts or dual listings, share classes with different voting rights, stock splits, as well as share and cash dividends. In some early-stage markets, there are companies with shares listed in multiple markets, that are transferable, yet the multiple listings frequently trade at different currency-adjusted prices. In Sri Lanka as well as other markets, there are stocks with multiple share classes, where the non-voting share class consistently trades at steep discounts of 25-50% relative to the voting shares, despite both share classes receiving identical dividend treatment. In some early-stage markets like Uruguay, stock splits and

share dividends that are dilutive often do not result in the price declines necessary to adjust for the impact of dilution. In these cases, local investors may feel there is greater value to own a larger number of shares even though the theoretical value of their total holding should remain unchanged by the corporate action.

It is immediately apparent in viewing Exhibit 5, that while the long-run returns of the three indices are generally similar, the paths taken varied substantially, and that is the subject of the following sections.

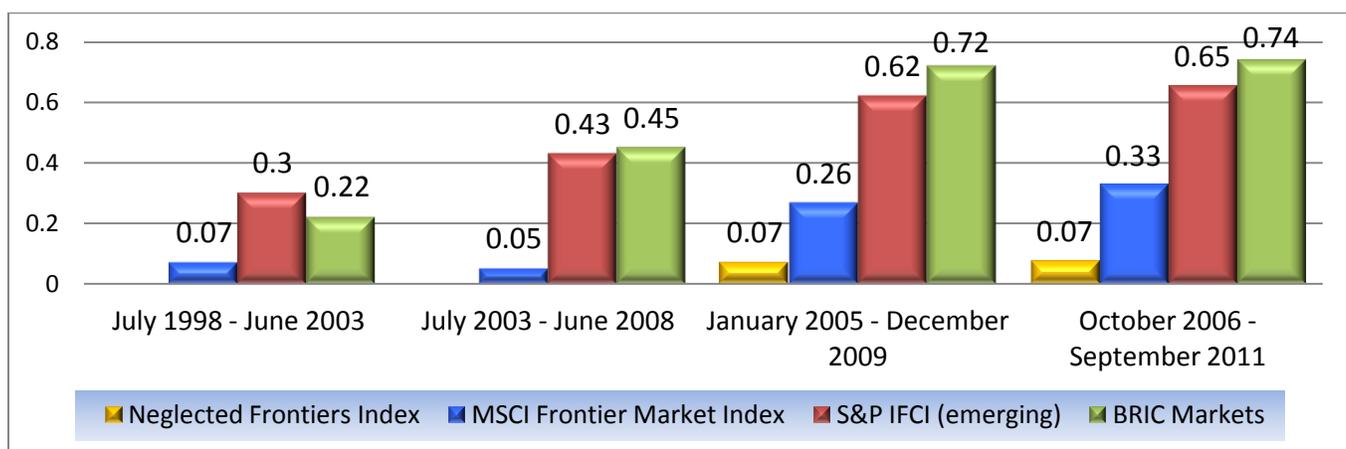
Correlations to Each Other and to Developed Markets

Possibly the most significant benefit that the early-stage frontier markets offer to global portfolio investors is their relatively low correlations, both among each other and to the developed markets. The diversification benefits presented by the standard frontier markets have been widely established, by Berger, Pukthuanthong, and Yang (2011), as well as others.^{xx} Despite rising country-level correlations following the period of the 2008-2009 global credit crisis, Todorov and Bidarkota (2011) utilized a dynamic, conditional correlation model, and established that unlike static correlations, conditional correlations have shown no general time trend, suggesting that the diversification benefits of investing in the frontier markets have not diminished substantially in recent years.^{xxi} Static cross-correlations, which are nonetheless more broadly understood and applied in the investment management industry, have increased since the 2008 credit crisis. However, these correlations remain relatively lower in the frontier markets than in the emerging markets. The Neglected Frontier Market Index countries offer much more limited data and have yet to be studied as comprehensively as the larger frontiers by the academic community.

Cross-correlations measured across several time periods utilizing the country-level returns from the Neglected Frontier Index show much lower correlations across countries in the early-stage frontiers than in any other category. Exhibit 6 demonstrates a relationship in which the smaller and more early-stage a market is within the development process, the less integrated that market is with other markets in its category. While data pre-crisis was not available for enough markets to be as meaningful, the average correlation coefficient of country-pairs was found to be 0.07 (average r^2 of country pairs of 3.1%) in two periods inclusive of the global credit crisis. Most country-pair

correlations within the early-stage frontier markets were low enough to be not significantly different than zero, and several country-pair correlations were negative.^{xxii} In addition, while the average cross-correlations have risen over sequential time periods in the standard frontier, emerging, and BRIC markets, the cross-correlations of the Neglected Frontier Index countries did not increase in the two periods for which data was available. More study is warranted to examine cross-correlations of market returns in the early-stage frontiers more dynamically, as well as on a principal component basis, but our initial study shows that there are significant risk-reduction benefits to be achieved through broad, country-level diversification in the early-stage frontier markets.

Exhibit 6. Average Cross-Country Correlations of Returns by Market Category over Various Time Periods



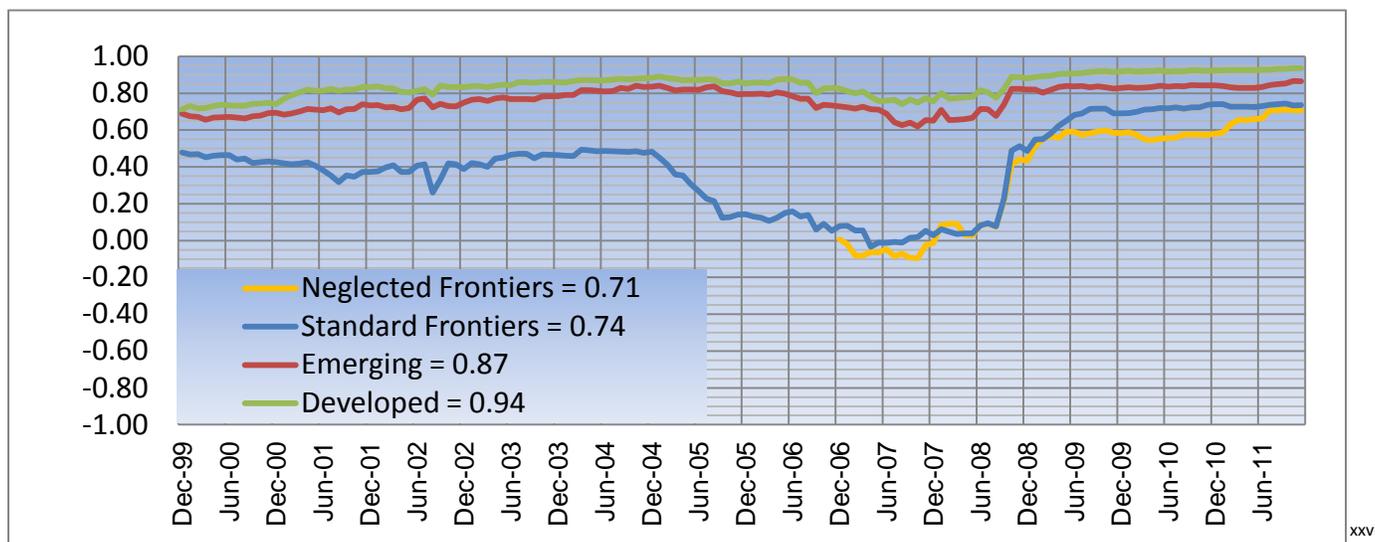
Part of what causes early-stage frontier markets to be less correlated to each other is the relative lack of economic and financial market integration across countries in this category. A major political, economic, or financial event in the US would quickly be heard, understood, and felt by investors in Europe, Japan, or Australia. A major event in China would quickly impact markets in Russia or Brazil. Yet a major event in Costa Rica may go unnoticed by investors in Mongolia, Malawi, or Moldova. The smaller economies of the world are both less integrated to each other as well as less impactful of one another.

Another significant benefit of the early-stage frontier markets to investors based in the developed world are low correlations of the Neglected Frontier Index countries as a group to the major developed market benchmark

indices. A portfolio investor with the majority of their holdings in the US, Europe, or other developed markets could reduce the correlation of the holdings in their portfolio and thereby reduce portfolio-level volatility by adding an allocation to the early-stage markets. Exhibit 7 illustrates the correlations over running 48 month time periods between various frontier and emerging market indices and the S&P 500 Index, which can serve as a proxy for other developed market indices due to the high cross-correlations in the developed market category. Exhibit 7 demonstrates that the less developed market categories tend to have lower correlations to the US equity market.

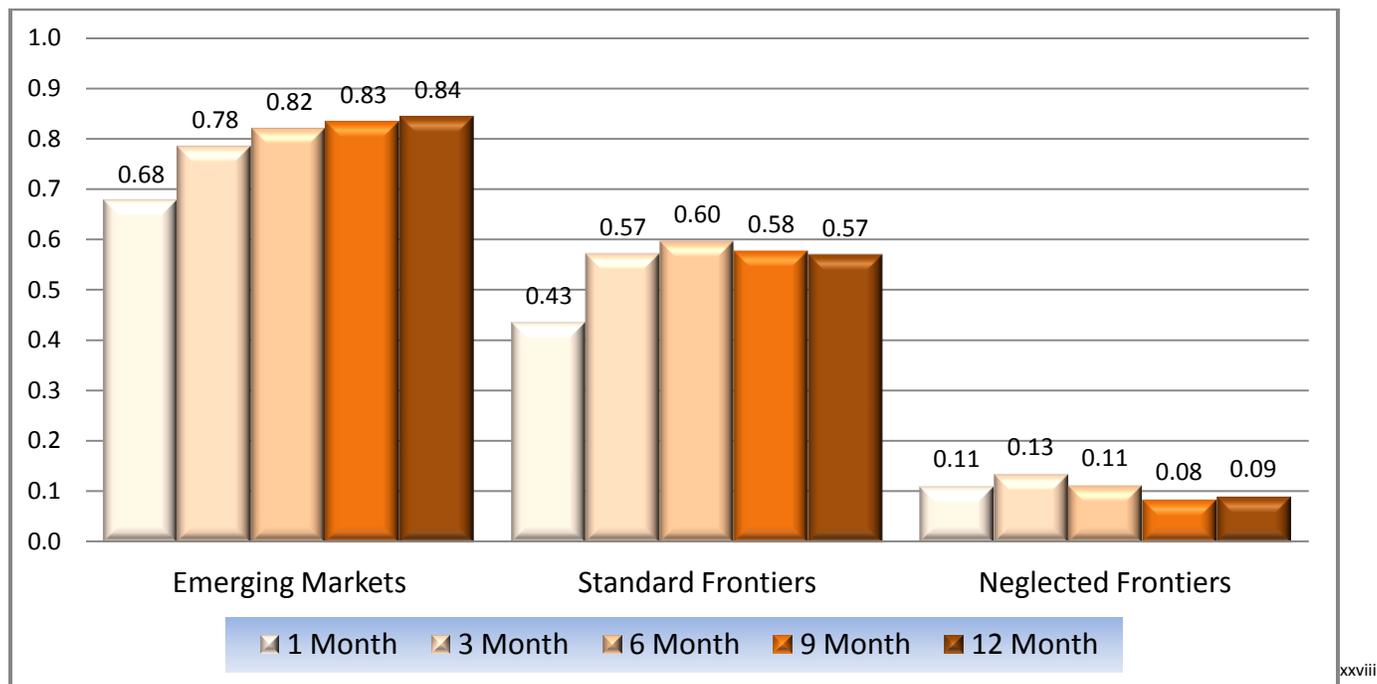
Another startling observation to be taken from Exhibit 7 is the large increase in correlations in all categories, but especially in the frontier markets, that occurred during the credit crisis in late 2008. A second increase in the correlation of the Neglected Market Index in 2011 has left the correlation of this category to the S&P 500 at a similar level to that of the standard frontier markets, 0.71 vs. 0.74 for the MSCI Frontier Market Index.^{xxiv} The rise in correlation in the Neglected Frontier Index appears to be largely driven by the Eastern European countries in the index, which tend to have higher levels of market integration as well as large betas to the global benchmark indices. The average Neglected Frontier Index country correlation to the S&P over the last 48 months was 0.19 (r). However, the Republika Srpske, the Bosnian Federation, and Macedonia had correlations against the S&P 500 of 0.67, 0.63, and 0.53 respectively over this period. The high betas of the Eastern European markets help to partially explain why the second spike in correlation to the US market occurred in 2011, during the Greek and European debt crisis. While the correlation to the developed markets has risen in recent years, the Neglected Frontier Index still offers the lowest overall correlation to the US market of any category of international equity markets. Correlations are known to spike during periods of peak volatility, and further study of shorter time periods or dynamic correlation analysis may be able to identify a decrease in correlations in the frontier markets from their crisis period levels.^{xxv}

Exhibit 7. Running 48 Month Correlations: Neglected Frontiers vs. the S&P 500 Index



While part of the low correlations in the early-stage frontiers is believed to be due to a relative lack of economic and financial market integration, it is worth noting that the limited liquidity offered by these markets may create the appearance of lower market integration than exists in reality. Low levels of liquidity can delay price discovery which can produce spurious low correlation coefficients if using short period observations. Stale market prices may not be reflective of market value, and this can exaggerate the apparent benefits of diversification during market downturns.^{xxvii} Indeed, several of the aforementioned studies of the diversification benefits of the frontier markets have utilized daily pricing data. While utilizing daily returns maximizes the number of observations in order to produce a more robust statistical analysis, correlations produced by daily returns are less meaningful in the frontier and early-stage markets where trading can be so infrequent that more meaningful price discovery often occurs over weeks or months. In order to examine the degree to which limited liquidity may exaggerate the diversification benefits of the frontier and early-stage markets, longer-period return correlations were calculated. Average correlations between early-stage frontier country returns and S&P 500 Index returns were examined using 3, 6, 9, and 12 month period returns. Exhibit 8 demonstrates that correlations do tend to rise when examined over longer periods in both the emerging and frontier markets.

Exhibit 8. Longer-Period Average Country Return Correlations to the S&P 500 Index by Market Category



Maximum correlations occur over different length periods in different market categories, however for all categories, the correlations effectively peak around 6 months. This means that in most categories, the full effect of a global event may be best reflected in emerging and frontier market prices within a three to six month time frame. Despite the rise in correlations demonstrated in the standard frontier markets, their correlation to the US market has not risen above that of the larger emerging markets. Even more pointedly, the correlations of the Neglected Frontier Index countries peaked at only 0.13 (r) using a three month period. The average early-stage frontier market is more correlated than it may appear due to delayed price discovery, but the persistently low correlations over longer time periods suggest that the diversification benefits of this market category are nonetheless significant.

Country Volatility and Index Volatility

At the individual country level, many of the early-stage frontier markets experience a high level of volatility. Countries at an early stage of their economic and political development can be more subject to event risks, such as wars, coups d’etat, terrorist attacks, ethnic rioting, or natural disasters. In a study of countries with stock markets

undergoing a period of war, it was found that 4 of the 10 countries with stock markets that experienced overt military conflict in the 10 year study period were early-stage markets, while all 10 were frontier markets.^{xxix} However, despite the potential for political and economic volatility in the early-stage frontier markets, the average per country volatility of those markets was less than that of the MSCI Frontier Market Index members, at 27.89% vs. 33.65% over the last five years, respectively. Both categories of frontier markets experienced lower volatility than the average emerging market, which experienced a standard deviation of monthly returns of 34.34% during this five year time frame. While less developed countries are subject perhaps to more unique country-specific risks, the absence of active, international investors from most early-stage markets helps to shelter these markets from some of the causes of global market volatility.

Perhaps more important to portfolio investors are the low cross-country correlations demonstrated in Exhibit 7, which help to reduce index or portfolio level volatility in the early-stage frontier markets. The index-level volatility shown in Exhibit 9 demonstrates that the greatest reduction from the individual country to the portfolio-level occurs in the Neglected Frontier category. The annualized standard deviation of monthly returns over the five year period ending 11/30/2011 was only 13.2% for the Neglected Frontier Index. That is less volatile than any other equity market category, including the S&P 500 Index. The Neglected Frontier Index was also the least volatile of any equity market category over the longer-term, nearly twelve year study period.

Exhibit 9. Annualized Average Country Volatility and Index-Level Volatility – ending 11/30/2011

Annualized Volatility	5 Year		2000-Present	
	Average Country	Index	Average Country	Index
Neglected Frontier Index	27.89%	12.58%	26.94%	12.45%
MSCI Frontier Market Index	33.65%	24.46%	31.10%	19.77%
S&P IFCI (emerging)	34.34%	29.29%	34.79%	24.73%
S&P 500 Index		19.29%		16.56%

xxx

It is likely that the limited liquidity available in the early-stage frontier markets is also one of the primary drivers of the apparently low volatility of these markets. Several early-stage markets, and even some standard index

member countries like Ghana and Zambia, have experienced large reductions in traded volumes at the beginning of global market downturns which can delay the local market reaction to a global crisis for up to six months.^{xxxii} In this case, maximum drawdown can be utilized as an effective measure of the real downside volatility experienced historically by investors in the early-stage markets. The maximum drawdown of the S&P IFCI measure of emerging markets during the 2008-2009 crisis period was -58.1%, and that of the MSCI Frontier Market Index was -65.7% using monthly returns data over their respective worst periods of 9-10 months. While the Neglected Frontier Index drawdown occurred over a longer time period of 18 months, the impact was less severe, and the maximum drawdown reached only -41.0% before the index began to recover. During the most recent period of declines during the 2011 US and European debt crises, the emerging markets reached a maximum drawdown of -25.9%, the standard frontier markets fell -20.3%, and the Neglected Frontier Index fell only -6.6%. Spillover effects that cause rising correlations are less precipitous during global crises of lesser magnitudes, and even the standard frontier markets provided a relative safe haven during the lesser downturn experienced in 2011.^{xxxiii} Despite the impact of delayed price discovery during crises, the early-stage frontiers nonetheless appear to provide the greatest refuge from global volatility of any emerging market sub-category.

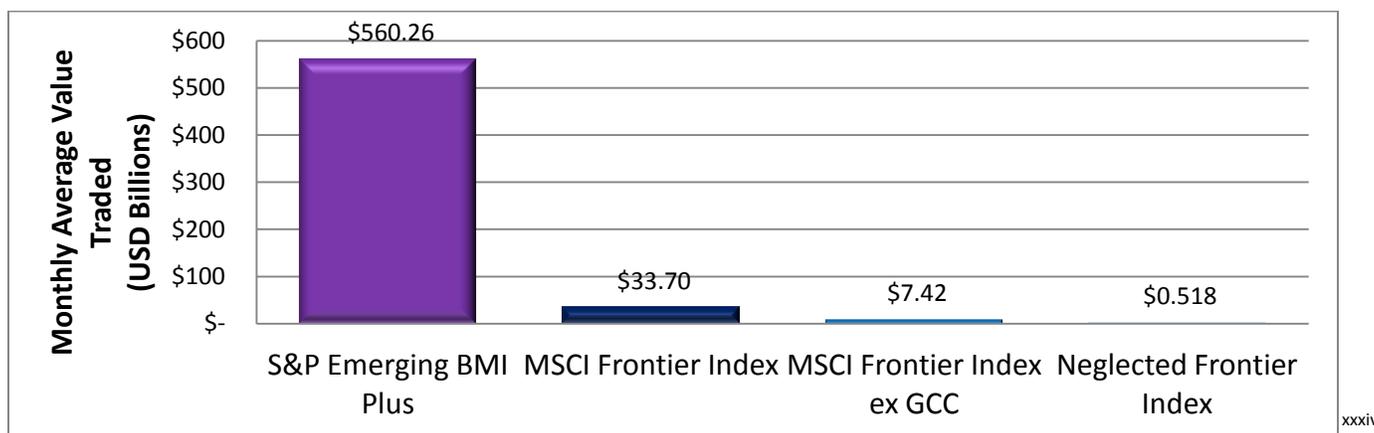
Implementation Challenges

The early-stage frontier markets present perhaps the greatest implementation challenges of any equity market category. Chief among these challenges is the limited liquidity offered by the early-stage markets. Exhibit 10 demonstrates how much lower traded volumes have been historically in the neglected frontier markets relative to the emerging markets. The entire early-stage frontier category of markets traded an average of \$518 million per month in the first half of 2010. The early-stage frontiers traded substantially less than the standard frontier markets. In the 6 months ending 11/30/2011, the average country constituent of the S&P Frontier BMI traded \$528.93 million per month, whereas the average Neglected Frontier Index country traded only \$7.35 million per month. Within the Neglected Frontiers, there are countries like Nepal and Palestine, which tend to trade over \$20 million a month, and markets like El Salvador and Moldova in which almost no trading activity occurred in the first

eleven months of 2011. Local brokers targeting foreign investors in these markets tend to focus on large block trades, which can help an investor trade a large multiple of average daily volumes. An assessment of liquidity risk should nonetheless be a central component of portfolio construction in early-stage frontier markets. Investors must have a long time horizon for the capital allocated to these markets in order to minimize the likelihood that they would need to liquidate positions during a market downturn, when liquidity challenges can be exacerbated. Most institutional investors active in the early-stage frontiers plan to build up positions over time, and are making the assumption that volumes will continue to rise as the markets develop. The relative lack of liquidity is probably the greatest challenge for institutional investors to overcome in the early-stage markets. While investing across a broad array of markets can help mitigate this issue somewhat, the only real solution to limited liquidity is for investors in the early-stage frontier markets to be focused on the long-run.

Trading in the early-stage markets requires patience. In a study of the trading experience of one frontier market fund, the average time delay to complete trades in the largest frontier markets was less than one trading day, the average delay to complete a trade in the standard frontier markets was 1.5 days, and the delay in the Neglected Market Index countries averaged 5.9 trading days.^{xxxiii} Traders in these markets must plan ahead and look for blocks to complete large orders. Exhibit 10 demonstrates the lower average trading volumes witnessed in the neglected frontier market countries relative to the larger frontier and emerging market universe.

Exhibit 10. Total Value Traded – Monthly Average for the 6 Months ending 5/12/2010



The limited liquidity available in the neglected frontier markets is directly related to the high cost of trading securities in these markets. Low volumes mean that stock brokers must charge high fees in order to sustain their businesses, and competition among brokers is often limited. In many early-stage frontier markets, 200bp commissions are commonplace (one-way). Mongolia is the most expensive market to trade in the world, where the largest broker by volume charges 365bps in commission. The average commission to trade equities in early-stage frontier markets was found to be 191bps in a recent study.^{xxxv} The lesser participation of the general population in the stock markets of lower income countries also makes it easier for governments to charge higher tariffs and fees on market transactions. These lower volumes also cause wider spreads, and market impact costs can be quite significant in the early-stage markets. Exhibit 11 illustrates the components of market implementation shortfall across three categories of frontier markets according to the experience of one active, global frontier fund.^{xxxvi} The average market impact cost of the Neglected Market Index countries, shown in Exhibit 11, was 231bps.

Exhibit 11 Components of Implementation Shortfall across Three Frontier Market Categories

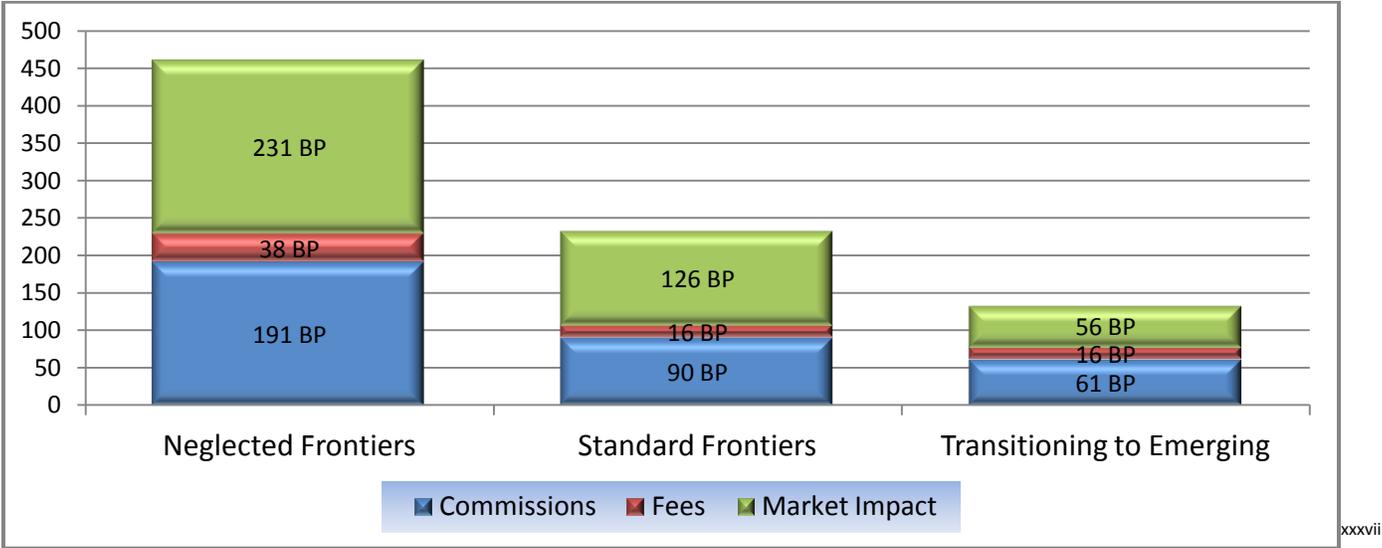
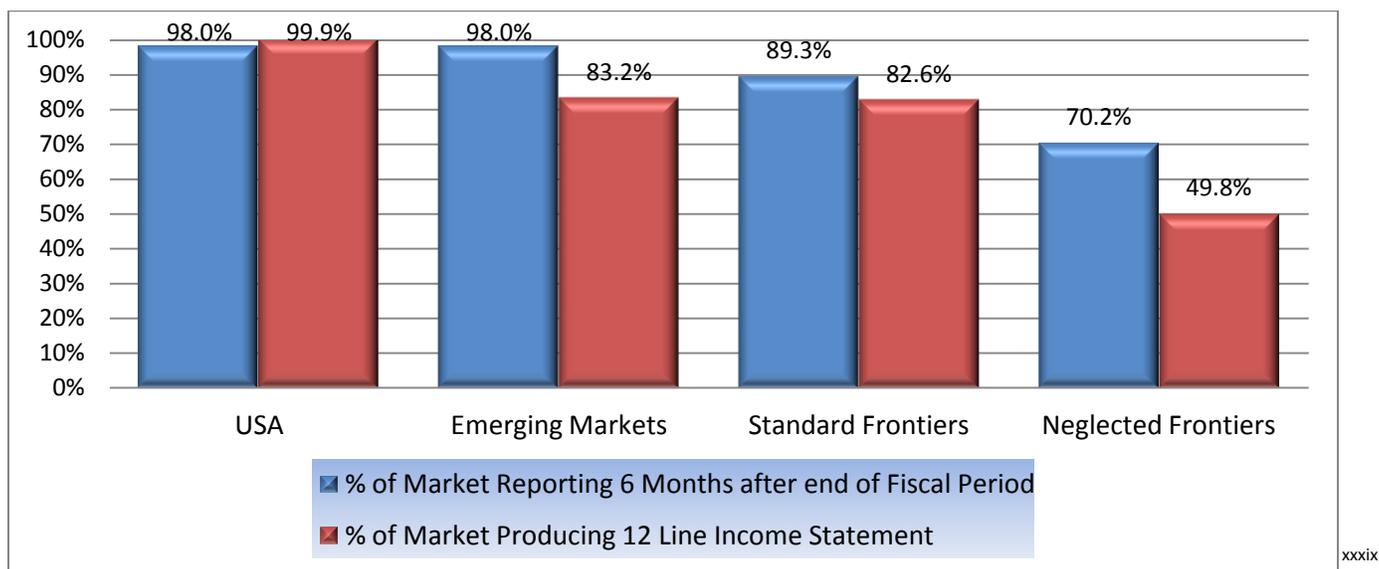


Exhibit 11 showcases the degree to which all components of trading costs are higher in less developed equity markets. Institutional investors looking to invest several times the average daily volumes of a market may experience market impact costs in excess of these averages. The costs of frequent trading in the frontier markets

may subsume any potential excess returns achieved utilizing such strategies. Marshall, Nguyen, and Visaltanachoti (2011) examined a sample of standard frontier markets and found that their relatively high transaction costs did not entirely subsume the benefits of diversification from investing in these markets. However, more study into this area is warranted in the early-stage frontier markets, where transaction costs are even higher, but cross-country correlations are lower than in the standard frontier markets.^{xxxviii} High trading costs should be taken into account when designing frontier market investment strategies, favoring buy and hold approaches rather than strategies that require frequent trading.

Another implementation challenge early-stage market investors must overcome is the limited availability of relevant information and research used in the investment decision-making process. As a category, early-stage, neglected frontier market companies offer the lowest quantity and quality of financial data to investors. While macro-level data has become more available due to the work of the IMF, World Bank, IFC, EBRD, as well as due to the improved reporting by local central banks and fiscal authorities, economic data is still less comprehensive in the frontier markets than it is in the developed markets. Company financial reporting is delayed longer than the reporting norms of the developed and emerging markets, and many companies report only summarized interim reports. There are early-stage markets where companies still only produce reports annually, and there are some companies that do not yet publicly release a cash flow statement. Exhibit 12 illustrates the room for improvement left in the reporting of companies in both the standard and early-stage frontier markets.

Exhibit 12. The Timeliness and Depth of Company Financial Reporting by Market Category

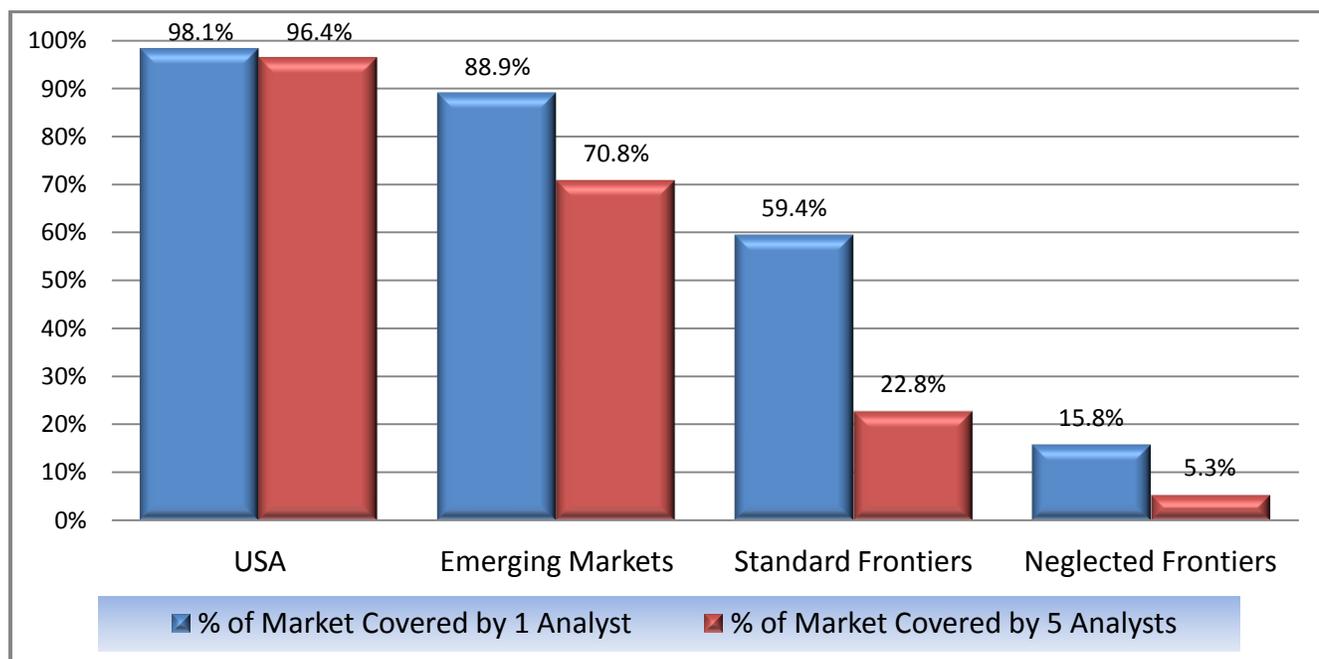


According to this study, less than 50% of early-stage frontier market companies produce an annual income statement with twelve lines of depth or more, including reference items in the notes. In addition to the frequency and quantity of data reported, some early-stage frontier markets’ accounting standards may provide lower quality reporting than in the more developed markets. This however, has been an area of significant improvement in recent years, with many of the larger companies based in early-stage markets voluntarily adopting IFRS. Many early-stage frontier companies now utilize local subsidiaries of big-three accounting firms. Data services like Bloomberg and Factset are expanding their coverage into early-stage markets to provide normalized fundamental data and globally comparable financial metrics. In recent years, Bloomberg’s Fundamentals group added data coverage of equities in Bosnia & Herzegovina, Macedonia, Montenegro, Zambia, and Panama, among others.

In addition to financial data, forward-looking research coverage is limited in the early-stage frontier markets. Low trading volumes reduce the incentive of stock brokerages to produce sell-side research, and the limited presence of large investment funds reduces the incentive for third-party research providers to enter these markets. It can also be more difficult for research analysts to acquire data or to speak with company management. In many early-stage markets, an active “equity culture” has yet to be developed. Many thinly-traded, tightly-held public

companies are run with a lack of transparency more common to private companies. Upon calling company management to try and set up a meeting, potential investors are sometimes told that “it is not management policy to meet with investors.” Management guidance is not only discouraged in some countries it is actually against market regulations. Exhibit 13 illustrates the limited coverage of forward-looking estimates in the early-stage markets.

Exhibit 13. Analyst Research Coverage by Market Category



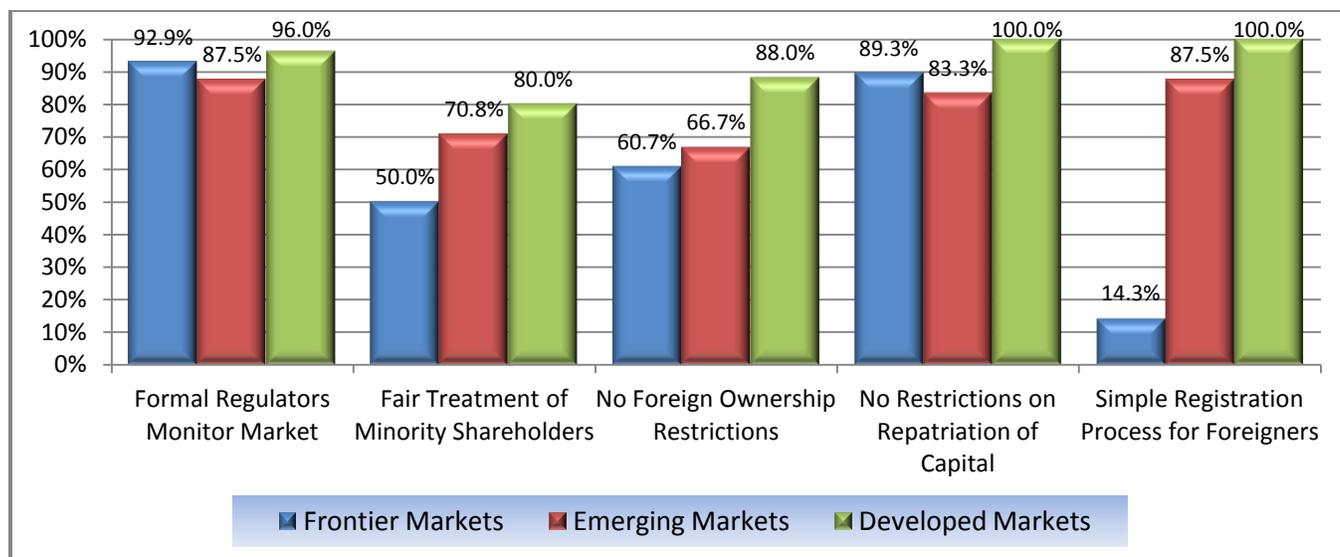
While the majority of companies in the standard frontier markets are covered by at least one sell-side analyst, only 22.8% are covered by at least 5 analysts. In the early-stage frontier markets, only 15.8% of companies by market capitalization are covered by 1 sell-side analyst.^{xli} Within the early-stage markets, the availability of data varies considerably. Some of the smaller Eastern European countries in particular, like Montenegro, Republika Srpske (Banja Luka exchange), and Georgia offer frequent reporting in IFRS and analyst research is available for the larger companies on the market. Despite the current limitations of coverage in many markets, financial data and analyst research coverage are two areas in which rapid improvement has been witnessed by frontier investors in recent years.

Market institutional weakness is another key challenge faced by frontier investors, and many early-stage markets provide hurdles to investors with regards to market regulatory policies, custody services, and trade settlement. FTSE's survey of countries that pass their Quality of Market Criteria by market category offers insights into where frontier stock markets may be deficient in these areas. FTSE's universe is comprised of countries either in their frontier index or on watch for inclusion, and so it does not provide data on many early-stage markets. However, some of the countries they monitor would be considered by many to fall in this category, such as Botswana, Cote d'Ivoire, Cyprus, Ghana, and Macedonia. While further study of the early-stage markets is needed in this area, it is likely that the early-stage frontier markets present even greater challenges to investors than the more-developed, standard frontier markets. The main issues impacting frontier markets due to market operational weaknesses include: the limited availability and competition among custodians, the speed of settlement, and the availability of settlement-free delivery. 82.1% of frontier markets offer sufficient competition among custodians to satisfy the FTSE criteria. 75.0% of frontier markets enforce settlement timing in T+3 time or better. Only 14.3% of frontier markets allow settlement-free delivery of securities, while this is offered in 62.5% of the emerging markets, and 88% of the developed markets. Once again, there is great discrepancy within the neglected frontiers in this category. Major global custodians, like the Bank of New York-Pershing network, provide custody services in some surprising markets like Costa Rica, Namibia, and Zambia. The Panamanian government recently passed a law allowing global custodians to provide services in its stock and bond markets. On the other hand, there are markets like Mongolia where custodians are not yet allowed by law and all shares must be registered and held in a central depository. Settlement timing varies from markets where pre-funding is required to markets with slow settlement timing, such as T+5 in Trinidad & Tobago and T+7 in Malawi. The norm however is still T+3, even in the early-stage markets.

The main issues caused by weak market regulatory policies in some markets include: slow and arduous market registration procedures, the imposition of foreign ownership restrictions and restrictions on capital repatriation, and the fair treatment by law of minority shareholders. Exhibit 14 highlights those areas in which frontier markets are

most deficient. Only 14.3% of frontier markets provide a simple registration process for foreign investors. In some early-stage markets, the original copy of a management firm’s articles of incorporation or other documents are required to be sent to both the local broker and the stock exchange central depository. In the markets with the lengthiest procedures, market registration can take 3-6 months to complete. There are, on the other hand, markets where registration takes a matter of minutes. Only 50% of frontier markets protect minority shareholders by law. Conflicts of interest between managers appointed by the majority owners and related companies can present unique company-specific risks to minority investors in the early-stage markets, and must be monitored closely by investment managers. More than a third of frontier markets restrict the investment of foreigners to a percentage of firm assets or bar foreign investors from certain public companies or sectors. Issues with regard to the repatriation of capital are also commonplace, as many less-developed countries originally drafted investment laws so as to minimize the perceived exploitation of locals by foreign investors. On the Libyan Stock Market, there is no formal prohibition of foreign investors, but the repatriation of capital from the market is currently limited to a mere \$5,000 a year, a policy that would preclude most institutional investors.

Exhibit 14. Average of Countries that Pass FTSE’s Quality of Market Criteria for Market Regulatory Policies

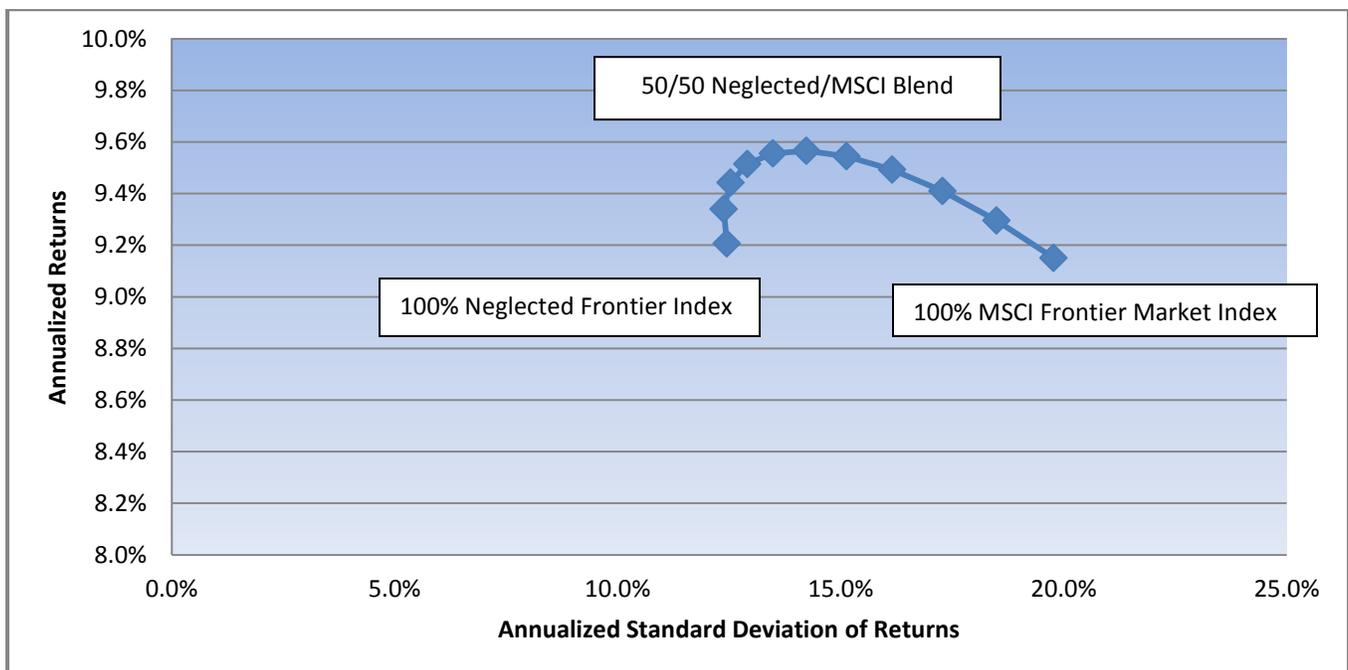


While these implementation challenges can be mitigated somewhat by country-level diversification in a global portfolio, ultimately experience investing in these markets can be critical for managers to overcome such unique and complex challenges.

Portfolio Construction

Due to the similar long run returns achieved in the early-stage and standard frontier markets, as well as the lower volatility and correlations present in the early-stage category, adding some exposure to early-stage frontier markets should improve the risk-return characteristics of a global frontier portfolio. Exhibit 15 demonstrates the risk and return of 10 potential portfolios blending the MSCI Frontier Market Index and the Neglected Frontier Index in increments of 10% using monthly data from the 2000-present period of nearly 12 years.^{xliii} During this period, the optimal theoretical blend of early-stage and standard frontier markets would be roughly 50/50, depending on the risk and return goals of the portfolio manager. A 50/50 standard/early-stage portfolio would have achieved a total annualized return of 9.57% during this period with annualized volatility of 14.23%.

Exhibit 15. The Risk/Return Characteristics of Various Blends of Standard Frontier and Early-Stage Portfolios

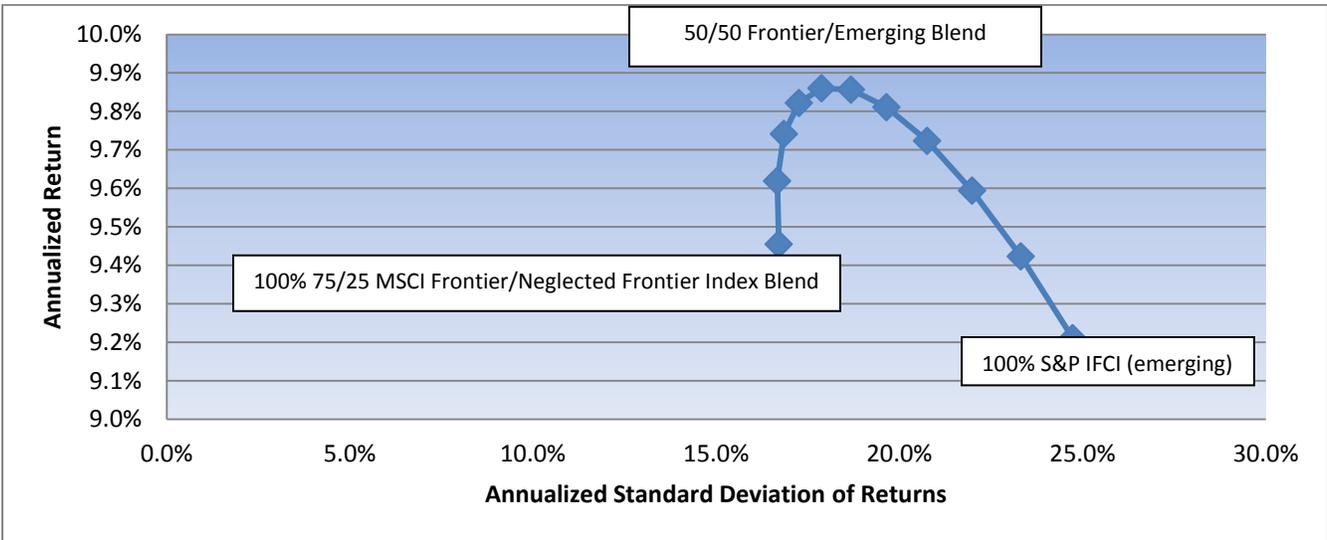


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A theoretical mix of 50% early-stage frontiers with 50% standard frontiers may have been optimal in terms of returns and volatility during this period, but such a large weight in the early-stage frontiers would present a range of implementation challenges that may be insurmountable to institutional investors of significant size, most notably in terms of liquidity. Institutional investors would be advised to reduce the weight in the early-stage markets from this theoretically optimal level dependent upon their need for liquidity.

Most institutional investors in the US and other developed markets have yet to venture significantly into even the standard frontier markets, let alone the early-stage markets. In order to examine the benefits of adding a diversified frontier portfolio to an existing emerging markets portfolio, a similar mean-variance study is conducted. Exhibit 16 illustrates the risk-return characteristics of 10 different blends between the S&P IFCI (emerging markets) and a 75/25 blend of the MSCI Frontier Markets Index and the Neglected Frontier Index over the same period. The 75/25 standard/neglected frontier blend achieved an annualized total return over this time period of 9.45% whereas the S&P IFCI emerging markets index returned 9.21%. In addition, the frontier blend arrived at this return with an annualized standard deviation of returns of 16.71% versus that of the S&P IFCI of 24.73%. Once again, the optimal theoretical mix over this period is around 50/50 emerging/frontier depending on the risk and return goals of the portfolio manager, and this portfolio would have returned 9.86% per year with volatility of 18.68%.

Exhibit 16. The Risk/Return Characteristics of Blending Standard and Early-Stage Frontiers with Emerging Markets

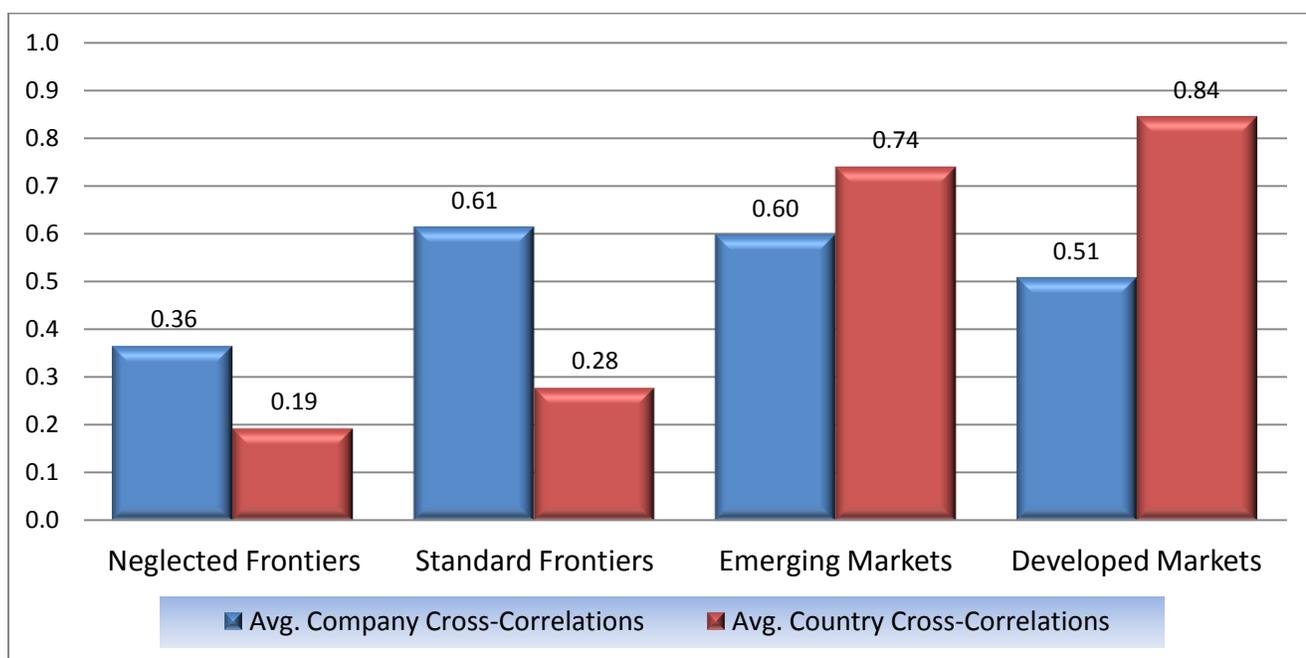


As with the standard/early-stage blend itself, the implementation challenges of investing in the frontier markets will likely require most institutional investors to reduce the frontier portion of their emerging markets investment from this theoretically optimal 50% level. Nonetheless, the data demonstrates that adding some allocation to both the standard and early-stage frontier markets to a broader emerging markets portfolio would have improved portfolio performance in terms of both risk and return during the period of this study.

Another critical element to portfolio construction in the frontier markets beyond the mix of markets by stage of development is the degree of country-level diversification employed in the portfolio as well as the use of portfolio rebalancing. As has been discussed earlier, the main frontier indices utilize market-capitalization weights at the country level, which results in heavy concentrations in the large Persian Gulf markets, as well as Nigeria. As opposed to market-capitalization weights, equal-country-weighted portfolios have achieved superior historical performance due to the phenomenon of mean reversion in the frontier markets. The high individual country volatility of the frontier markets results in an overshooting of the fundamental reality during the peaks and troughs of market cycles. While this mean reversion is difficult to time, a portfolio that is regularly rebalanced to equal country weight-targets tends to outperform a portfolio that utilizes drifting weights. Over the 2000-present period, the S&P Frontier BMI Index achieved an annualized return of 12.79% per year, and did so with an annualized standard deviation of returns of 18.46%. Over the same period, an equal weighted portfolio of the S&P Frontier BMI countries that was rebalanced on a monthly basis would have returned 20.76% per year, and with an annualized volatility of 14.50%. Monthly rebalancing is similarly beneficial in the early-stage frontier markets, where employing monthly rebalancing to equal weights of the Neglected Frontier Index countries increased annual returns from 9.21% to 12.19% and reduced volatility from 12.45% to 9.48%. The benefits of rebalancing would have been even greater relative to a market-capitalization weighted early-stage index, as the Neglected Frontier Index uses a weight constraint which itself improves country diversification. While monthly rebalancing would be costly due to the high trading costs in the frontier markets, periodic rebalancing is theoretically beneficial to frontier portfolios.

Another topic for consideration by frontier market practitioners is the degree to which country-selection plays an important role in the investment decision making process versus stock selection. Stock-level analysis is a critical component of investment management, particularly in the developed countries, where analysts often seek to outperform benchmark indices by employing rigorous company analysis by constructing estimates and feeding them through valuation models such as discounted cash flow models or sum of parts comparables-based models. Some practitioners attempt to utilize similar bottom-up strategies when investing in the frontier markets. However, the low cross-country correlations and high in-country correlations of stock returns make country-selection relatively more important in frontier portfolios than stock-selection. Exhibit 17 demonstrates these correlations within and across countries by the various stages of market development.

Exhibit 17. Cross-Country and In-Country Correlations by Stage of Market Development



The cross-country correlations are lower relative to the in-country correlations in the less developed equity markets. In the early-stage frontier markets however, both cross-country and in-country correlations are low, meaning that both country and stock-selection can be important drivers of portfolio level performance. The efficacy of various

methods of country and stock selection in frontier and early-stage market portfolios would be an interesting topic for further study.

Conclusion

Many of the theoretical benefits of the frontier markets are present to an extreme in the least-developed, early-stage equity markets. The early-stage frontier markets offer unique geographic exposures and have achieved impressive long-run performance. These neglected markets have historically been the least volatile of any emerging market sub-category, and the low cross-country correlations have helped to reduce the index-level volatility of these markets even further. In addition, the low correlation between the early-stage frontiers and the developed markets would help reduce the volatility experienced by a global portfolio investor based in the developed world. The primary concerns an investor should address in evaluating a potential allocation to these markets are related to implementation.

The neglected frontier markets are neglected, largely because of their limited size and liquidity, which is itself a difficult chicken-and-the-egg conundrum faced by many of these markets. Yet these markets are also neglected because of the difficulty of applying investment processes established in the developed world markets to this nascent sub-asset class. These limitations are due to sub-par regulatory policies, investor restrictions, limited financial data and research coverage, as well as other issues which can be partially resolved by local company management and market regulatory authorities. Market inefficiencies caused by these limitations may however present opportunities to active investors with experience managing assets in the early-stage frontiers.

Patience is required to participate in the long-run development potential of these countries. Nonetheless, for those investors with a long time horizon and the tolerance for high levels of perceived risk, the early-stage frontier markets can improve the risk-return profile of a broader emerging or frontier market portfolio. Despite the constant development of equity markets, the creation of new markets will ensure that there will always be a frontier of equity investing.

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ⁱ *Italicized = countries covered by a regional stock exchange, including the BRVM in West Africa and the ECSE in the Caribbean. Bold = members of MSCI and/or S&P Frontier indices * = Markets unavailable to US investors.*

ⁱⁱ In addition, Russell recently launched the Russell Frontier Index, which includes most of these markets included by the S&P Frontier BMI as well as several other early-stage markets excluded by S&P. While Russell's index is a more comprehensive measure of the investable frontier markets, it has yet to gain as wide recognition among institutional investors as the MSCI and S&P indices. It is also worth noting that some of the early-stage markets have weights in the Russell Frontier Index of less than 0.1% due to their small free-float and ownership-restriction-adjusted market capitalizations.

ⁱⁱⁱ The following exhibit provides the data source for each country-level constituent of the Neglected Frontier Index as well as the beginning date on which data became publicly available. Each country index has been included in the composite on this beginning date unless the country would otherwise be disqualified from index inclusion on that date based on our aforementioned inclusion criteria.

	Returns Data Source	Bloomberg Ticker	Beginning Date
Armenia	Caravan Capital Proprietary Index	None Available	1/30/2000
Bahamas	Caravan Capital Proprietary Index	None Available	5/31/2000
Barbados	Caravan Capital Proprietary Index	None Available	11/30/2003
Bermuda	Bermuda Stock Exchange Index	BSX INDEX	6/15/1994
Bhutan	Caravan Capital Proprietary Index	None Available	1/31/2002
Bosnia & Herzegovina	Caravan Capital Proprietary Index	None Available	3/31/2004
Cape Verde	Caravan Capital Proprietary Index	None Available	12/31/2006
Cayman Islands	Caravan Capital Proprietary Index	None Available	11/30/2006
Costa Rica	BCT Corp Costa Rican Stock Market Index	CRSMBCT INDEX	11/30/1994
Eastern Caribbean	Caravan Capital Proprietary Index	None Available	10/31/2001
El Salvador	Caravan Capital Proprietary Index	None Available	12/31/2006
Fiji (South Pacific)	Caravan Capital Proprietary Index	None Available	6/30/2006
Georgia	Caravan Capital Proprietary Index	None Available	3/31/2005
Guyana	Caravan Capital Proprietary Index	None Available	7/31/2003
Iraq	Caravan Capital Proprietary Index	None Available	7/31/2004
Macedonia	MBI 10 Macedonian Stock Exchange Index	MBI INDEX	12/30/2004
Malawi	Caravan Capital Proprietary Index	None Available	1/30/2003
Maldives	Caravan Capital Proprietary Index	None Available	4/30/2002
Malta	Malta Stock Exchange Index	MALTEX INDEX	12/25/1995

Moldova	Caravan Capital Proprietary Index	None Available	1/30/2003
Mongolia	Mongolia Stock Exchange Top 20 Index	MSETOP INDEX	1/4/1999
Montenegro	Switched btw two Montenegrin exchange indices on 11/30/2010	MOSTE INDEX, MONEX20 INDEX	3/3/2003
Nepal	Caravan Capital Proprietary Index	None Available	1/30/2000
Palestine	Caravan Capital Proprietary Index	None Available	12/31/1999
Panama	Caravan Capital Proprietary Index	None Available	1/30/2004
	<i>Panama was removed as of 12/31/2007</i>		
Papua New Guinea	Caravan Capital Proprietary Index	None Available	12/31/2003
Paraguay	Caravan Capital Proprietary Index	None Available	1/31/2006
Republika Srpske	Bosnia BIRS Index	BIRS INDEX	5/17/2004
Syria	Caravan Capital Proprietary Index	None Available	3/10/2009
Tanzania	Caravan Capital Proprietary Index	None Available	10/30/2005
Uganda	Caravan Capital Proprietary Index	None Available	1/30/2004
Uruguay	Caravan Capital Proprietary Index	None Available	5/31/2004
Uzbekistan	Caravan Capital Proprietary Index	None Available	8/31/2001
Venezuela	Caracas Stock Exchange General Index	IBVC INDEX	12/30/1993
Zimbabwe	Standard Bank Zimbabwe Index	SBEQZW INDEX	3/4/2009

^{iv} Constrained Country Weight = $2x (1/n)$ where n represents the number of countries in the index.

^v The majority of frontier funds known to the authors utilize country weights significantly more balanced than the heavily-concentrated, market-capitalization weighted indices produced by MSCI and S&P.

^{vi} Sanctions thus far imposed by the US government on Syria have focused on the top members of the Assad government, and do not yet prohibit US investment in companies on the Damascus Securities Exchange. Legislation extending the sanctions to other areas of the Syrian economy had been referred to the Committee on Banking, Housing, and Urban Affairs as of the time of publication of this paper.

^{vii} S&P has taken a similar tack in their handling of Zimbabwe's historical data in their S&P Frontier BMI.

^{viii} Data compile from Standard and Poor's Index Database as of 10/31/2011.

^{ix} Quisenberry, Jr., Clifford, and Griffith, Benjamin. "Frontier Equity Markets: A Primer on the Next Generation of Emerging Markets." JWM, Winter 2010. Available online at with a subscription:

<http://www.ijournals.com/doi/abs/10.3905/jwm.2010.13.3.050>

^x Griffith, Benjamin, and Quisenberry Jr., Clifford. "Banking on the Frontier." March, 2009. Available online at:

<http://efrontierjournal.com/2011/11/07/frontier-banks-riding-out-the-storm/>

^{xi} The correlation of the Neglected Frontiers Index to the S&P GSCI Total Return CME, which is a measure of several commodity price benchmarks, was 0.34 (r) using monthly data over the ten year period ending October 31st, 2011. This is lower than the same correlation between this commodity return index and the MSCI Frontier Market Index of 0.51 and the MSCI Emerging Market Index of 0.48.

^{xii} Quisenberry, Jr., Clifford, and Griffith, Benjamin. "Frontier Equity Markets: A Primer on the Next Generation of Emerging Markets." JWM, Winter 2010. Available online at with a subscription:

<http://www.ijournals.com/doi/abs/10.3905/jwm.2010.13.3.050>

^{xiii} 2011 population estimate using the IMF WEO Database.

^{xiv} Quisenberry, Jr., Clifford, and Griffith, Benjamin. "Frontier Equity Markets: A Primer on the Next Generation of Emerging Markets." JWM, Winter 2010. Available online at with a subscription:

<http://www.ijournals.com/doi/abs/10.3905/jwm.2010.13.3.050>

^{xv} Adjusting out the dividend yield of countries for which a total return index was available.

^{xvi} The total return is based on the geometric addition of the two sources of return. Total return = $(1 + \text{price return}) * (1 + \text{dividend yield}) - 1$

^{xvii} Cumulative returns have been calculated from index data provided by MSCI, S&P, as well as the proprietary Neglected Frontier Index using monthly periods beginning January, 2000 and ending in November, 2011. Due to a

lack of prior dividend data, the daily impact of the previous three year average dividend yield has been added to the return stream of The Neglected Frontier Index in order to approximate the total return of that index.

^{xviii} Price to Earnings ratios were compiled by averaging MSCI country index-level P/E ratios for the Standard Frontier, Emerging Market, and MSCI World categories. The Price to Earnings ratio of the Neglected Frontier Index is based on a compilation of stock exchange index average P/E ratios reported on Bloomberg as well as market capitalization-weighted P/E ratios from a proprietary Neglected Market database in the case of countries for which fundamental equity data was not available on Bloomberg.

^{xix} Todorov, Galin, and Bidarkota, Prasad. "Time-Varying Risk and Risk Premiums in the Frontier Markets." October, 2011. Available online at: <http://efrontierjournal.com/2011/11/16/time-varying-risk-and-risk-premiums-in-frontier-markets/>

^{xx} Berger, Pukthuanthong, and Yang analyze the level of integration of a set of standard frontier market countries on a principal component basis. Their principal component model reveals that the frontier markets offer low levels of integration with global market factors, and that this level of integration has not substantially increased over time.

Berger, David, Pukthuanthong, Kuntara, and Yang, J. Jimmy. "International Diversification with Frontier Markets." November, 2011. Available online at: <http://efrontierjournal.com/2011/11/16/international-diversification-with-frontier-markets/>

^{xxi} Todorov, Galin, and Bidarkota, Prasad V.. "Time-Varying Financial Spillovers from the US to Frontier Markets." May, 2011. Available online at: <http://efrontierjournal.com/2011/11/16/time-varying-financial-spillovers-from-the-us-to-frontier-markets/>

Todorov, Galin, and Bidarkota, Prasad V.. "Time-Varying Risk and Risk Premiums in Frontier Markets." October, 2011. Available online at: <http://efrontierjournal.com/2011/11/16/time-varying-risk-and-risk-premiums-in-frontier-markets/>

^{xxii} To illustrate this point: one country pairing over this time period, that of the Eastern Caribbean and Moldova, with a correlation coefficient of returns equal to the average for the group of 0.0734 has a p-value of 0.5768, signaling that a correlation of this magnitude is not statistically different from zero at a 5% or 10% significance level. Using our monthly country returns data over the October 2006-September 2011 period of 60 months, statistical significance exists at least at the 10% significance level in those country pairs for which the correlation coefficient was approximately 0.21 or greater. This compares with the average country cross correlation coefficient of 0.07 over this period of study.

^{xxiii} The averages of the cross correlations of returns have been calculated using the MSCI and S&P country-level indices using monthly net total returns for each respective period. All of the country constituents of the composite indices have been included in each category. The Standard Frontiers category represents the MSCI Frontier Market Index universe of countries. The Emerging Markets category represents the S&P IFCI universe of countries, and the BRIC's category is represented by Brazil, Russia, India, and China. The Neglected Frontier Index average country cross correlation is based on the pricing returns collected as part of the proprietary Neglected Market database.

^{xxiv} The p-value of the regression between the Neglected Frontier Index return and the return of the S&P 500 Index over the 48 month period ending November, 2011 was 2.3×10^{-8}

^{xxv} Todorov, Galin, and Bidarkota, Prasad V.. "Time-Varying Financial Spillovers from the US to Frontier Markets." May, 2011. Available online at: <http://efrontierjournal.com/2011/11/16/time-varying-financial-spillovers-from-the-us-to-frontier-markets/>

^{xxvi} Give graph data description.

^{xxvii} Quisenberry, Jr., Clifford, and Griffith, Benjamin. "Risks on the Frontier of Investing". September, 2009. Available online at: <http://efrontierjournal.com/2011/11/11/risks-on-the-frontier-of-investing/>

^{xxviii} Longer-period return correlations were calculated using consecutive 1, 3, 6, and 12 month period returns for the study period beginning in June of 1996 (subject to data availability per country) and ending August 2010. Data for the Standard Frontier and Emerging Market universe were collected using S&P and MSCI country index-level returns of their country constituents, and the Neglected Market universe is based on a sampling of 21 of the country constituents of the current Neglected Frontier Index universe.

^{xxix} Griffith, Benjamin. "Investing in Frontier Conflict Countries." November, 2010. Available online at: <http://efrontierjournal.com/2011/11/21/investing-in-frontier-conflict-countries-3/>

^{xxx} Annualized volatility was calculated based on the standard deviation of monthly country and index returns in each category for both periods ending 11/30/2011. The average volatility is based on the mean standard deviation of monthly returns of all of the country constituents in each composite category.

^{xxxi} Quisenberry, Jr., Clifford, and Griffith, Benjamin. "Risks on the Frontier of Investing". September, 2009.

Available online at: <http://efrontierjournal.com/2011/11/11/risks-on-the-frontier-of-investing/>

^{xxxii} Todorv, Galin, and Bidarkota, Prasad. "Time-Varying Financial Spillovers from the US to Frontier Markets."

May, 2011. Available online at: <http://efrontierjournal.com/2011/11/16/time-varying-financial-spillovers-from-the-us-to-frontier-markets/>

^{xxxiii} Trading data compiled based on the experience of The Emerging Frontiers Master Fund LTD as managed by Caravan Capital Management LLC from the period of 6/22/2009 through 8/31/2010.

^{xxxiv} Data compiled based on the total USD value traded of the entirety of each market index category for the 6 month period ending 5/12/2010. The Standard Frontiers and the Standard Frontiers ex GCC represent the MSCI Frontier Market Index and the MSCI Frontier Market ex GCC Index respectively. The Neglected Frontiers Index category is based on data from a sampling of 21 of the county constituents of this index for which volume data was available.

^{xxxv} Trading data compiled based on the experience of The Emerging Frontiers Master Fund LTD as managed by Caravan Capital Management LLC from the period of 6/22/2009 through 8/31/2010.

^{xxxvi} Trading data compiled based on the experience of The Emerging Frontiers Master Fund LTD as managed by Caravan Capital Management LLC from the period of 6/22/2009 through 8/31/2010.

^{xxxvii} Trading data compiled based on the experience of The Emerging Frontiers Master Fund LTD as managed by Caravan Capital Management LLC from the period of 6/22/2009 through 8/31/2010.

^{xxxviii} Marshall, Ben R., Nguyen, Nhut H., and Visaltanachoti, Nuttawat. "Frontier Market Diversification and Transaction Costs." October, 2011. Available online at:

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1942592

^{xxxix} The timeliness of market reporting is represented by the percentage of the market capitalization of companies that had published the annual financial report within at least 6 months after the end of the previous year's fiscal period. The depth of market reporting is represented by the percentage of the market capitalization of companies that had produced an annual financial report that contains at least 12 lines of depth in the income statement or in the supplementary notes to the financial statements. Data was collected using Bloomberg as well as through manual confirmation where needed, and was compiled based on the 2009 fiscal period reports collected in August of 2010. The Emerging Markets was represented by the entire universe of country constituents of the S&P IFCI, the Standard Frontiers was based on the country constituents of the MSCI Frontier Market Index, and the Neglected Frontiers category was based on the country constituents of the Neglected Frontier Index using the Neglected Markets proprietary database.

^{xl} Analyst estimate data was collected using Bloomberg Best Estimate data as well as through local broker research databases in the frontier markets. It is likely that there are other analyst research reports providing further coverage in existence but that which were not identified through either of these sources. However, it is believed that on a relative basis this sample represents the breadth and ease of acquiring forward looking research reports across the various stages of market development. The Emerging Markets was represented by the entire universe of country constituents of the S&P IFCI, the Standard Frontiers was based on the country constituents of the MSCI Frontier Market Index, and the Neglected Frontiers category was based on the country constituents of the Neglected Frontier Index using the Neglected Markets proprietary database.

^{xli} Analyst estimate data was collected using Bloomberg Best Estimate data as well as through local broker research databases in the frontier markets. It is likely that there are other analyst research reports providing further coverage in existence but that which were not identified through either of these sources. However, it is believed that on a relative basis this sample represents the breadth and ease of acquiring forward looking research reports across the various stages of market development. The Emerging Markets was represented by the entire universe of country constituents of the S&P IFCI, the Standard Frontiers was based on the country constituents of the MSCI Frontier Market Index, and the Neglected Frontiers category was based on the country constituents of the Neglected Frontier Index using the Neglected Markets proprietary database.

^{xlii} Data was compiled using the percentage of countries (based on the number of countries rather than the market capitalization) in each category which passed or failed FTSE's criteria from the Quality of Markets Assessment

Matrix, which can be found online at: http://www.ftse.com/Indices/Country_Classification/. This data was compiled as of the September 2010 update.

^{xliii} The total annualized return for the neglected frontier markets is estimated utilizing the average dividend yield mentioned earlier in the paper, of 3.19% per year. This average yield was collected as of the last three years of the study period due to limited data earlier in the period, and so this is an imperfect estimate. The yield has been added to the returns assuming monthly payments so as to simulate the appropriate impact on portfolio volatility.

^{xliiv} Annualized returns and standard deviations of monthly returns calculated for blends of the MSCI Frontier Market Index and the Neglected Frontier Index in allocation increments of 10% for the period from January 2000 to November 2011. The estimated dividend yield of the Neglected Frontier Index has been added to each monthly return so as to estimate the impact of dividends on the volatility of the index's total returns.

^{xlv} Annualized returns and standard deviations of monthly returns calculated for blends of a 75%/25% blend of the MSCI Frontier Market Index and the Neglected Frontier Index respectively and a 100% allocation to the S&P IFCI emerging markets index. Returns and volatility are displayed in allocation increments of 10% for the period from January 2000 to November 2011. The estimated dividend yield of the Neglected Frontier Index has been added to each monthly return so as to estimate the impact of dividends on the volatility of the index's total returns.

^{xlvi} In-country average cross correlations of stock-level returns were computed for the 5 year period ending August 2010, utilizing a sample of the 10 largest companies in each market by market capitalization at the end of the period. Cross-country average correlations were computed for the 5 year period ending August 2010. 7 countries were selected at random (and based on data availability) for both the in-country and cross country correlation samples.