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Exploring the next frontier: A review of frontier equity markets

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Executive summary. The term *frontier markets* refers collectively to a set of countries that fall outside the markets traditionally included in global equity indexes. On the surface, such countries might be considered Third World, but according to the World Bank, the per capita gross national income (GNI) of constituent countries of common frontier markets indexes ranges from high income (greater than \$12,476) to low income (less than \$1,025).¹ In fact, of the more than 30 countries classified by various index providers as frontier, only 7 fall into the low-income or lower-middle-income categories. Instead, classification of frontier markets often reflects a country's political and market environment, including depth and breadth of financial markets, legal and regulatory infrastructure, and general ease with which foreign investors can do business.

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¹ For more details on the classification rankings by the World Bank, refer to <http://data.worldbank.org/about/country-classifications>.

For example, Argentina, a frontier market according to equity index providers, is classified by the World Economic Forum (WEF) as an economy that is transitioning to the highest stage of development (i.e., one that is “innovation-driven”).² Economically, Argentina would thus seem to warrant consideration by global investors. However, the World Bank also rates Argentina’s financial markets within the bottom 12% (126th out of 142) in terms of development. Indeed, incidents such as the country’s recent nationalization of publicly traded YPF S.A. demonstrate the potential risks—unrelated to traditional equity market risks—associated with investing in a frontier-market country.

This paper describes the overall characteristics of frontier markets and examines the investment case for and the considerations of including them in a diversified portfolio. Ultimately, we conclude that although frontier markets (as represented by broad market indexes) offer reasonable statistical and theoretical investment characteristics, the challenges of a dedicated allocation likely overshadow the potential benefits.

Notes on risk: All investments are subject to risk, including the possibility that your investment may decline in value. Diversification does not ensure a profit or protect against a loss. Investments in stocks or bonds issued by non-U.S. companies are subject to risks including country/regional risk and currency risk. Stocks of companies based in emerging markets are subject to national and regional political and economic risks and to the risk of currency fluctuations. These risks are especially high in emerging markets. Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

² The World Economic Forum releases an annual *Global Competitiveness Report*, which benchmarks factors underlying national competitiveness. The WEF defines *competitiveness* as the set of institutions, policies, and factors that determine a country’s level of productivity and, in turn, its level of prosperity. Twelve “pillars,” grouped into three buckets, are evaluated. “Factor-driven” economies focus on institutions, infrastructure, the macroeconomic environment, and health and primary education. “Efficiency-driven” economies focus on higher education and training, goods-market efficiency, labor-market efficiency, financial-market development, technological readiness, and market size. “Innovation-driven” economies focus on business sophistication and innovation. For more details on the WEF’s classification system and individual country rankings, see the *Global Competitiveness Report*, 2012–2013, at http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012-13.pdf.

Figure 1. Comparing frontier-market weightings, by index

Country	S&P Frontier Broad Markets Index (BMI)	MSCI		Country	S&P Frontier Broad Markets Index (BMI)	MSCI	
		Frontier Markets Index	FTSE Frontier 50 Index			Frontier Markets Index	FTSE Frontier 50 Index
Argentina	5.4%	2.9%	7.8%	Mauritius	1.7%	0.9%	3.7%
Bahrain	2.0	0.6	0.4	Namibia	0.2	—	—
Bangladesh	1.3	2.5	5.1	Nigeria	9.8	12.8	21.1
Botswana	0.6	—	—	Oman	2.3	3.4	6.6
Bulgaria	0.2	0.1	—	Pakistan	3.8	4.2	—
Côte d'Ivoire	0.5	—	—	Panama	3.3	—	—
Croatia	1.4	2.1	2.4	Qatar	13.4	14.2	24.6
Cyprus	0.6	—	—	Romania	1.0	1.1	4.3
Ecuador	0.6	—	—	Serbia	—	0.2	—
Estonia	0.4	0.4	0.9	Slovakia	0.4	—	—
Ghana	0.3	—	—	Slovenia	1.5	1.9	3.6
Jamaica	0.7	—	—	Sri Lanka	1.9	2.0	3.7
Jordan	3.7	0.9	1.7	Trinidad and Tobago	1.2	—	—
Kazakhstan	5.2	3.6	—	Tunisia	1.0	0.8	2.0
Kenya	1.8	2.9	8.4	Ukraine	1.5	0.3	—
Kuwait	19.5	27.0	—	United Arab Emirates	6.8	10.2	—
Latvia	0.1	—	—	Vietnam	3.0	2.4	3.4
Lebanon	2.5	2.4	—	Zambia	0.3	—	—
Lithuania	0.3	0.5	0.6				

Notes: Data for S&P Frontier BMI are as of May 31, 2012; data for both MSCI Frontier Markets Index and FTSE Frontier 50 Index are as of September 30, 2012. Dashes indicate that a country is not included in an index. Index weightings may not sum to 100% because of rounding.

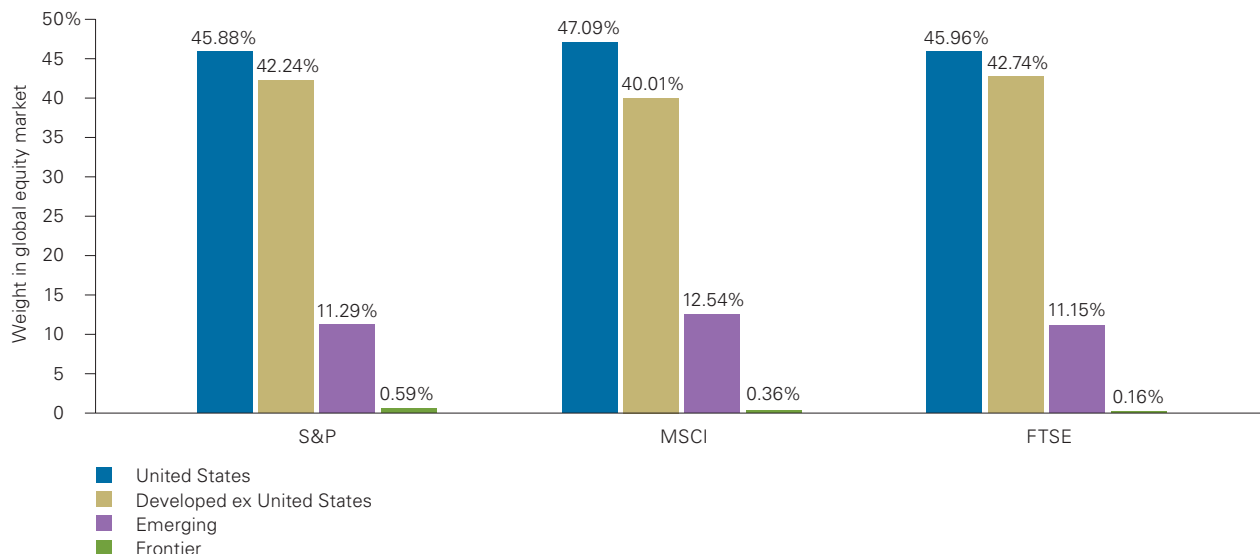
Sources: Vanguard, based on country allocations obtained from Standard & Poor's and FTSE benchmark fact sheets; for MSCI, country allocations obtained from Thomson Reuters Datastream.

According to equity index providers, frontier markets represent countries in need of significant improvement in several areas including market size, openness to foreign ownership, ease of capital inflows/outflows, efficiency of infrastructure, and political stability. Although different index providers generally agree on the characteristics that lead to a country being classified as "frontier," the way each provider classifies and weights each country in an index can vary (see **Figure 1**).

Many countries constitute frontier markets, yet their aggregate market value is tiny compared with that of the global equity market. For perspective, **Figure 2**, on page 4, shows the percentage of global market capitalization of various equity markets relative to the market cap of the aggregate global equity portfolio. No matter which index is used, frontier markets collectively represent less than 1% of the global market. Within the MSCI Frontier Markets Index for example, countries range in size from \$89 million (Bulgaria) to \$28.2 billion (Kuwait).³

³ For perspective, the market cap of the MSCI USA MicroCap Index was \$79.9 billion as of September 30, 2012, with the market cap of the median micro-cap company in the index listed at \$157.8 million.

Figure 2. Size of equity markets as percentage of global equities



Notes: S&P indexes include U.S. BMI, Developed ex U.S. BMI, Emerging BMI, and Frontier BMI. MSCI indexes include USA Index, World ex USA Index, Emerging Markets Index, and Frontier Markets Index. FTSE indexes include All-World United States Index, All-World Developed ex US Index, All-World Emerging Index, and Frontier 50 Index. Data as of September 30, 2012.

Sources: Vanguard, using data from Thomson Reuters Datastream.

The appeal of frontier markets

Expectations for robust economic growth

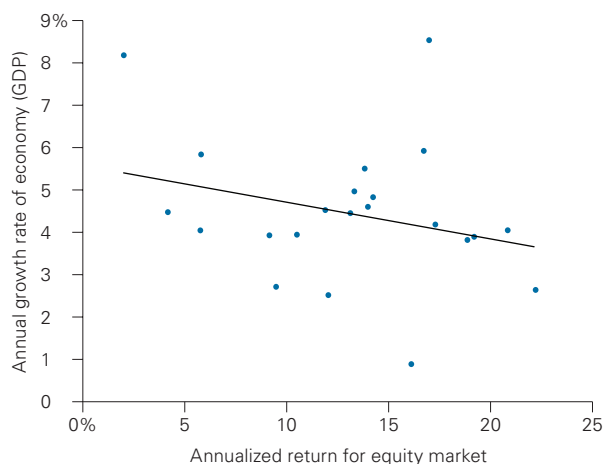
According to the International Monetary Fund (IMF), frontier markets collectively are expected to enjoy economic growth similar to that of emerging markets over the five years through 2017 (4.47% versus 4.67%, respectively).⁴ It's important to note that these growth expectations significantly exceed consensus estimates for economic growth in developed nations such as the United States and Japan, or in Europe as a whole. Such discrepancies in economic growth are a primary reason for interest in frontier markets as an investment option. Indeed, the assumed link between economic growth and market returns is intuitive and should hold over the very long term (that is, the growth of an economy should eventually translate into earnings growth

for domestic firms). However, previous Vanguard research has shown little correlation between economic growth and market returns over typical investment horizons (Davis et al., 2010, and Davis, Aliaga-Díaz, and Ren, 2009). Instead, those authors have demonstrated the importance to higher market returns of growth surprises (actual growth versus expected growth), valuations (how much investors pay for expected growth), and globalization (the relationship between the composition of economic growth and corporate earnings growth).

Figure 3 shows the relationship between economic growth and equity market returns for those frontier-market countries possessing data since 2000. As with previous research, we show a weak relationship (0.07 R-squared), meaning higher economic growth did not correspond with higher market returns, and

⁴ Figures represent real average annual gross domestic product growth rates as provided by the IMF World Economic Outlook Database (October 2012).

Figure 3. Poor relationship between economic growth and market returns



Note: Data cover the period from January 31, 2000, through September 30, 2012.
Sources: Vanguard, using data from Thomson Reuters Datastream.

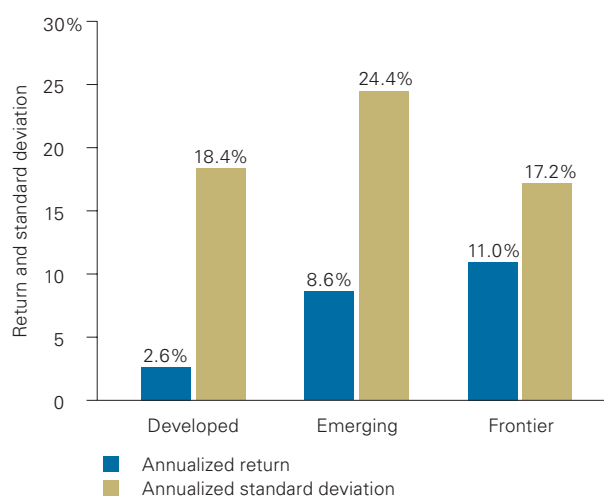
in fact led, on average, to slightly lower returns.⁵ Because what really matters is positive growth surprises (growth in excess of expectations), investors should not invest in frontier markets based solely on expectations for robust economic growth.

Expectations for higher returns

In addition to expectations regarding economic growth, investors might anticipate outsized returns from frontier markets. Because frontier countries' markets are less developed and are generally riskier in terms of liquidity, market structure, and political climates, one would expect a risk premium relative to developed markets (and also, one could argue, to emerging markets).

Figure 4 shows that since January 31, 2000, when return data became available, frontier markets have outperformed both developed markets and emerging markets. However, rather than simply attributing these excess returns to compensation for bearing

Figure 4. Returns and volatility for global-market equity segments



Notes: Developed markets represented by MSCI World ex USA Index; emerging markets represented by MSCI Emerging Markets Index; frontier markets represented by S&P Frontier BMI ex Gulf Cooperation Council (GCC) Index from January 31, 2000, through November 30, 2007, and MSCI Frontier Markets Index thereafter. The S&P index excludes GCC countries because of lack of foreign investor access over time. More recently, such restrictions have been relaxed, and GCC countries are now included in most frontier-market indexes. Data cover the period from January 31, 2000, through September 30, 2012.

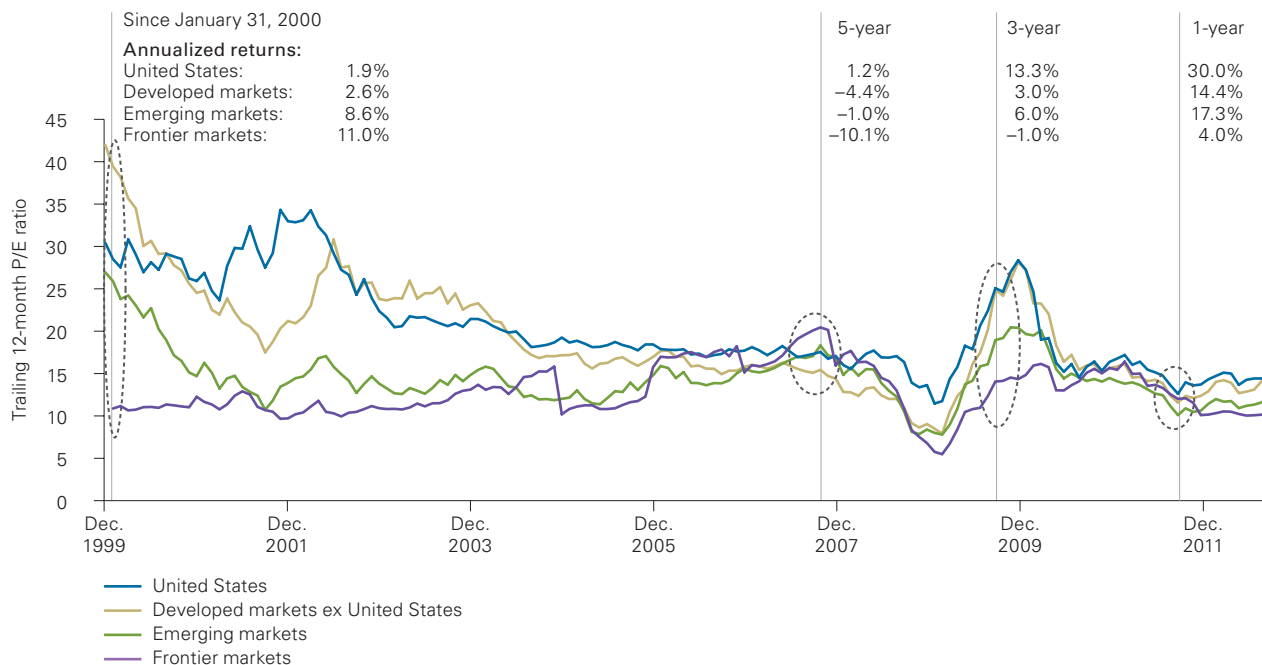
Sources: Vanguard, using data from Thomson Reuters Datastream.

additional risks, Figure 5, on page 6, suggests that the return differences since 2000 could be caused by significant differences in initial price/earnings (P/E) valuations between frontier markets and developed markets—in other words, the price investors collectively pay for earnings growth and economic expansion. Of course, the figure also suggests that valuation differences today are much lower than they were ten-plus years ago and, further, that the “noise” of the markets in the short term can completely overwhelm valuation differences. Political risk, for example, is impossible to model, but can overwhelm valuations in terms of influence on returns.⁶

⁵ One reason for this counterintuitive relationship is that the drivers of a country's economy are often not the same drivers of a country's financial markets. According to Speidell (2011), “many of the big commodity producers are global multinationals,” and “the largest companies are often government owned.” These larger multinationals could be domiciled in more-developed countries and therefore represented in other indexes. (ExxonMobil, for example, is domiciled in the United States and is therefore included in U.S. equity indexes. However, according to ExxonMobil's 2012 shareholder report, the company maintains substantial operations in many frontier-market countries such as Nigeria, Argentina, United Arab Emirates, Kazakhstan, and Vietnam.) Or, if government-owned, the multinationals contribute to the GDP of a country, but are not represented in the stock market of the country.

⁶ For a discussion of the relevance of valuations in emerging-market countries, see Phillips et al. (2011).

Figure 5. Selected historical valuations (P/E ratios) for global markets



Notes: The United States represented by MSCI USA Index; developed markets represented by MSCI World ex USA Index; emerging markets represented by MSCI Emerging Markets Index; frontier markets represented by S&P Frontier BMI ex GCC Index from January 31, 2000, through November 30, 2007, and MSCI Frontier Markets Index thereafter. Remaining index data cover the period from December 31, 1999, through September 30, 2012.

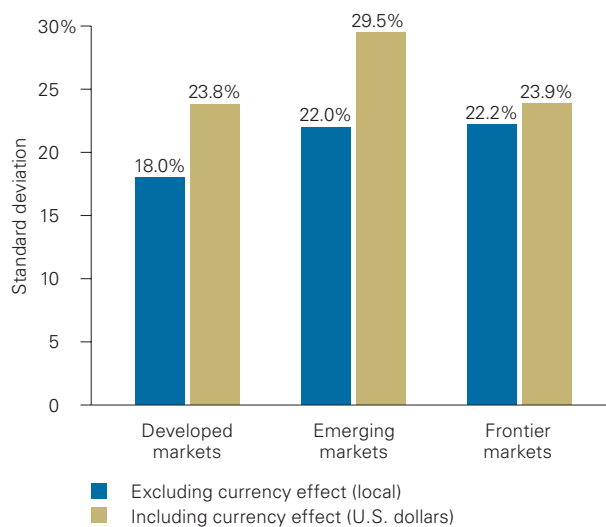
Sources: Vanguard, using data from Thomson Reuters Datastream.

Just as history may not repeat, expectations may not always translate into realized returns. And because frontier-market indexes do not have a long history of data, our data set is not robust enough to make substantial conclusions about long-term performance. One interesting result of our analysis, however, is that frontier markets outperformed both developed and emerging markets with less risk (defined in Figure 4 as volatility).

There are two potential explanations for frontier markets' less volatile return history since January 2000. First, currency can have a significant influence on realized volatility. **Figure 6** shows currency's impact on developed, emerging, and frontier markets since returns were available in the MSCI Frontier Markets Index. (Returns in U.S. dollars include

currency effects, and local returns exclude currency effects.) Currency meaningfully increased the realized volatility of both developed and emerging markets, and when viewed in local currency terms, frontier markets actually experienced the greatest volatility (albeit marginally vis-à-vis emerging markets). The relatively muted impact of currency on frontier markets' volatility perhaps indicates that these currencies are not as free-floating as their more developed counterparts. In other words, the implication is that the currencies of many frontier-market countries are likely managed so that they closely follow the U.S. dollar or other major currencies, potentially dampening the inherent volatility that should be present if the country's currency were free-floating. All else equal, a country whose currency is pegged to the U.S. dollar would

Figure 6. Volatility of global markets with and without currency effect



Notes: Developed markets represented by MSCI World ex USA Index; emerging markets represented by MSCI Emerging Markets Index; frontier markets represented by MSCI Frontier Markets Index. All indexes are reported in “local” currency returns, thus removing the effect of foreign exchange rates. November 30, 2007, represents the start of MSCI Frontier Markets Index in local currency. Data cover the period from November 30, 2007, through September 30, 2012.

Sources: Vanguard, using data from Thomson Reuters Datastream.

see little, if any, currency volatility. Although outright pegs are less common today, currency management is not uncommon (but is difficult to ascertain).⁷ An unanswered, but important question for investors is whether past experience can be expected to continue, or whether—as a result of globalization, free flow of capital, and rising investor interest—the volatility of frontier-market currency might be expected to increase.

Another potential explanation we found for frontier markets’ lower volatility is that for much of the period from January 31, 2000, through September 30, 2012, frontier markets were much less correlated among themselves than were either emerging markets or developed markets (see Figure 7, on page 8). All else equal, the lower the cross-

correlations between countries within an index, the lower the index’s overall volatility owing to the power of diversification. Of course, as markets become more integrated, correlations can be expected to increase, as has occurred in developed and emerging markets.

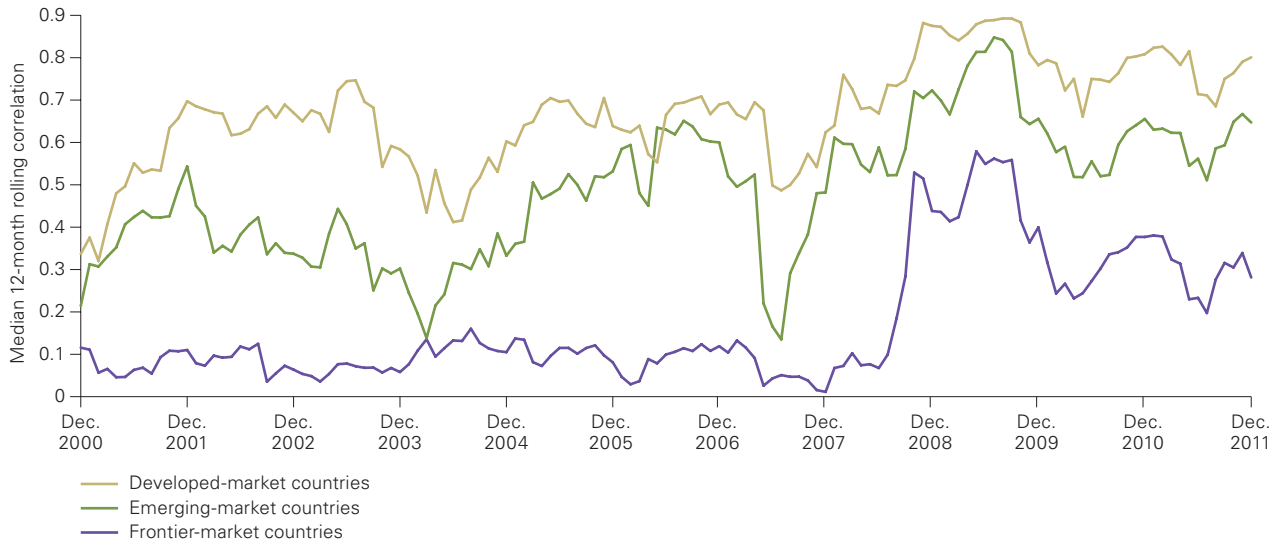
Potential for diversification

Aside from expectations for both growth and higher returns, a third oft-cited reason for investing in any asset class or sub-asset class is the diversification potential resulting from low or imperfect correlations to the remaining assets in a portfolio. Since January 2000, frontier markets have posted attractive correlations ranging from –0.01 versus U.S. bonds (represented by Barclays U.S. Aggregate Bond Index) to 0.69 versus foreign developed-market stocks (represented by MSCI World ex USA Index). However, average correlations do not tell the whole story. Figure 8, on page 8, breaks the full period into two segments—pre- and post-global financial crisis—and compares the correlations of the frontier markets to various asset classes and sub-asset classes.

As Figure 8 illustrates, between January 31, 2000, and 2007, correlations between frontier markets and various asset and sub-asset classes were generally low. In fact, the highest correlation over the first half of the data series was 0.53 versus foreign developed markets. However, just as the cross-correlations in Figure 7 increased during the global financial crisis, since 2008, the correlations of frontier markets to other asset and sub-asset classes have differed markedly from the long-term average. Although the correlation to U.S. bonds has remained low, the correlations to other risky assets have increased, substantially so in some cases. Since 2008, the lowest correlation (other than to U.S. fixed income) has been to foreign developed-market bonds (0.45), while correlations to developed-market equities (0.79), emerging-market equities (0.77), U.S. equities (0.74) and commodities (0.71) have increased substantially (see Figure 8).

⁷ In addition, we found that the median cross-correlation of all frontier-market currencies was 0.19 and that the correlation of the currency basket to the returns of the MSCI Frontier Markets Index was 0.45, meaning that some of the volatility may have been mitigated through two layers of diversification. For comparison, the correlation between the currencies of developed markets and the developed markets index was 0.22 over this period, while the correlation between the currencies of emerging markets and the emerging markets index was 0.71.

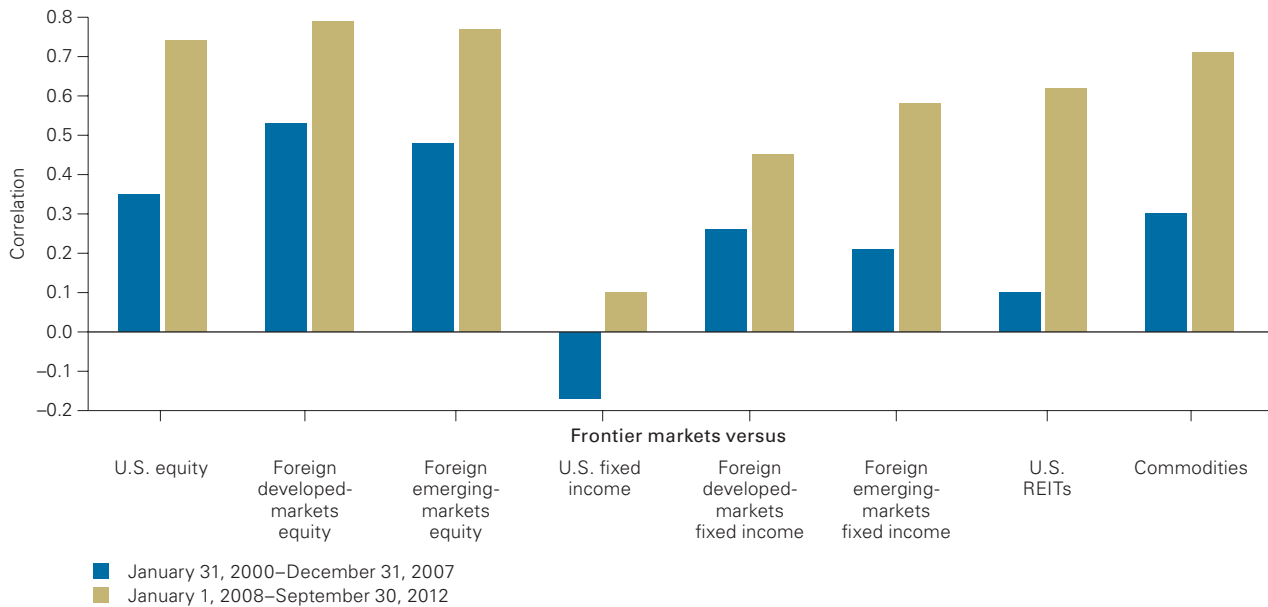
Figure 7. Median cross-correlations within developed, emerging, and frontier markets



Note: Data cover 12-month rolling periods from December 31, 2000, through December 31, 2011.

Sources: Vanguard, using data from Thomson Reuters Datastream.

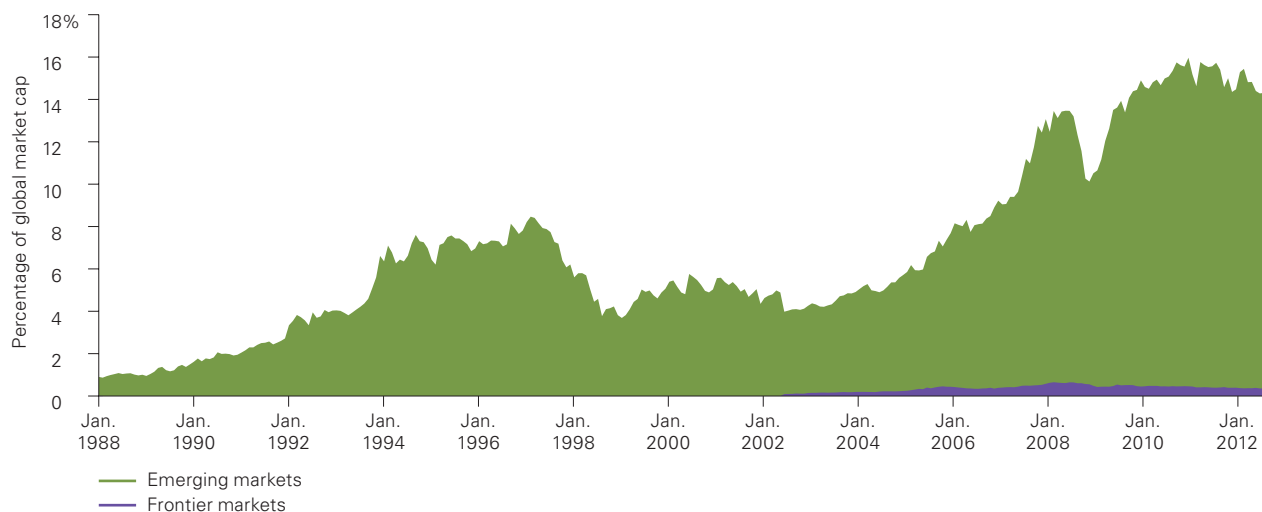
Figure 8. Correlations of frontier markets to various asset classes and sub-asset classes have increased



Notes: Returns cover the period from January 31, 2000, through September 30, 2012. Benchmarks include the following: Frontier markets—S&P Frontier BMI ex GCC Index from January 31, 2000, through November 30, 2007, and MSCI Frontier Markets Index thereafter; U.S. equity—MSCI USA Investable Markets Index; foreign developed-markets equity—MSCI World ex USA Index; foreign emerging-markets equity—MSCI Emerging Markets Index; U.S. fixed income—Barclays U.S. Aggregate Bond Index; foreign developed-markets fixed income—Barclays Global Aggregate ex U.S. Bond Index; foreign emerging-markets fixed income—JPMorgan Emerging Markets Bond Index; U.S. REITs—FTSE/NAREIT Equity REIT Index; commodities—Dow Jones UBS Commodity Total Return Index. Data cover the period from January 31, 2000, through September 30, 2012.

Sources: Vanguard, using data from Thomson Reuters Datastream.

Figure 9. Frontier markets lag emerging markets as percentage of global market capitalization



Notes: Emerging markets represented by MSCI Emerging Markets Index; frontier markets represented by S&P Frontier BMI ex GCC Index from January 31, 2000, through November 30, 2007, and MSCI Frontier Markets Index thereafter through September 30, 2012.

Sources: Vanguard, using data from Thomson Reuters Datastream.

Frontier markets: The next emerging markets?

By investing in frontier markets, can investors expect to capture future growth similar to what emerging markets collectively have experienced? In other words, if investors “missed out” on the rapid growth of emerging markets, can they essentially get a mulligan by buying into frontier markets? Although such a rationale may be intuitive, we find the frontier/emerging markets analogy to be challenging.

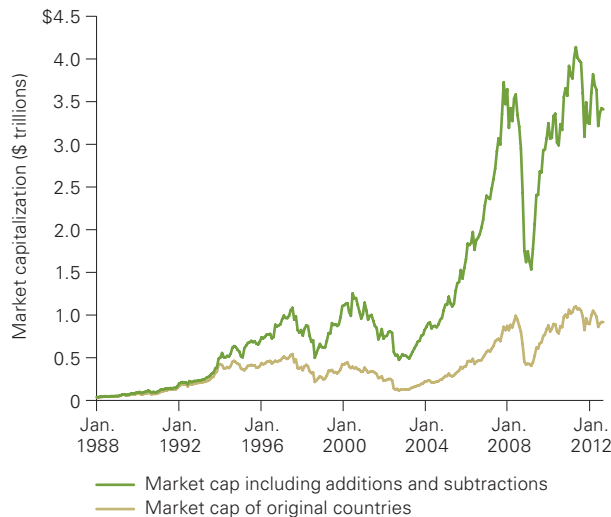
As a percentage of global market capitalization, frontier markets have lagged well behind emerging markets at every point in history. For example, **Figure 9** illustrates that in 1990, emerging markets accounted for 2% of the global market cap, while today (as of September 2012) frontier markets account for only 0.36% of the global market. Further, after ten years (2000), emerging markets had grown to almost 6% of the global market, while frontier markets had not surpassed 0.54% of the overall market at any point in history.

It’s also important to note that as individual countries within a frontier markets index grow and mature, they likely graduate to an emerging markets index. This implies that growth in a frontier index may be limited. For comparison, small-cap companies have traditionally made up the bottom 10% of a given market. As a company grows, the small-cap segment does not expand; instead, the firm may graduate to mid-cap and eventually to large-cap.

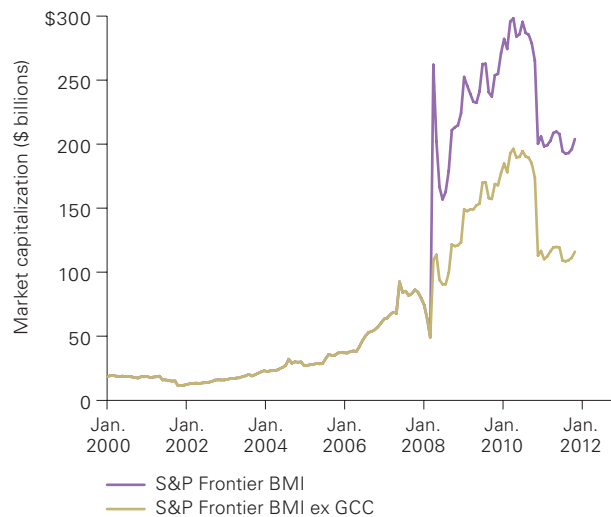
Because of the “graduation” issue, the only realistic way for frontier markets to increase their share of the global marketplace is through the addition of new frontier markets. For example, in 1988, the MSCI Emerging Markets Index was launched with eight countries represented. By 1992, four more countries were added, and by 1997 the index represented 27 countries. **Figures 10a** and **10b**, on page 10, demonstrate the impact on total market capitalization of additions to market indexes.

Figure 10. Expanding the frontier markets index can be an important consideration

a. Growth in emerging markets index



b. Growth in frontier markets index



Notes: Emerging markets index growth represented by MSCI Emerging Markets Index; frontier markets index growth represented by S&P Frontier BMI (with additions and subtractions) and S&P Frontier BMI ex GCC (original countries).

Sources: Vanguard, using data from Thomson Reuters Datastream.

Within frontier markets, the most significant change has been the opening of the Gulf Cooperation Council countries to foreign investment. The question for frontier markets going forward is whether they can continue to meaningfully increase their footprint in the global marketplace. To do so, a given frontier markets index would need to either (1) increase the size of its existing markets through the addition of new publicly traded companies; (2) see its current constituents grow at a rate exceeding those of either developed or emerging markets in aggregate (this would occur through excess earnings growth, P/E expansion, or a combination, but would likely eventually lead to graduation); or (3) add new countries or markets. Although it's difficult to assign a probability to any of these, the opening of new

frontier markets would seem to be the most logical path toward expansion. Indeed, the largest untapped countries include Saudi Arabia (no public investments), Iran (forbidden to U.S. investors), and Venezuela (significant political risks).

Practical considerations for investing in frontier markets

As previously mentioned, frontier markets are generally characterized by illiquidity and limited investability.⁸ Figure 11 uses several different metrics to evaluate and compare frontier markets to emerging and developed markets. Figure 11a shows the markets' capitalization as a percentage of GDP, with the idea that as a country makes the transition

⁸ Liquidity issues should not be confused with accessibility of frontier-market products. An abundance of options do not exist, but frontier-market funds and ETFs are available to the average investor. However, given the small size of the market and the liquidity issues described in this paper, assets in these products remain low and bid-ask spreads high, compared with products representing more mature markets. For example, as of October 31, 2012, the largest broad-based frontier-market ETF (NYSE: FRN) had approximately \$153 million in assets under management (AUM), with an average daily bid-ask spread of 0.29% for October (sources: Guggenheim and AcraVision), compared with the largest emerging-market ETF (AMEX: VWQ), which had \$71.7 billion AUM as of the same date and an average daily bid-ask spread for October of 0.02% (sources: Vanguard and AcraVision). Thus, liquidity issues exist not only in the underlying securities markets but also in the products that represent these markets. In general, low AUM and large spreads can create risk for fund managers when trying to manage large cash flows and track associated benchmarks.

from an agricultural to an industrial and then to an intellectual economy, the equity market cap generally increases as a ratio of the economy.

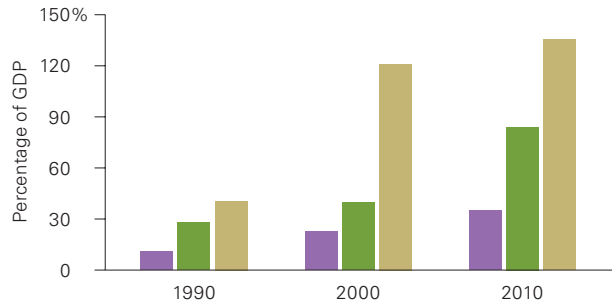
Figure 11b looks at the percentage of market cap traded relative to GDP. The chart thus gauges various economies’ degree of financial advancement. That is, the more financially advanced an economy, the greater interest market participants have in participating in the economy. Clearly, developed markets are the most financially advanced, with frontier markets lagging well behind.

Figure 11c shows the turnover ratio for equities in the various markets. (We use turnover here as a simple metric to gauge the relative liquidity of an equity market: The greater the turnover, the higher the liquidity.) The figure shows that the turnover metric for frontier markets has not only decreased since 2000 but was significantly lower in 2010 than the turnover of emerging markets—and even versus emerging markets’ turnover level in 1990. For investors looking for investment opportunities with little friction, this is a concerning metric.

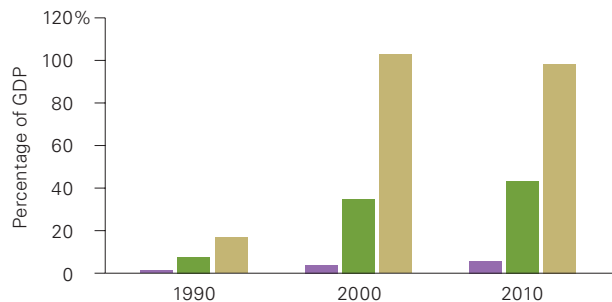
An alternative measure of liquidity is the time required for a fund manager to liquidate a hypothetical \$100 million portfolio in both the MSCI Emerging Markets and MSCI Frontier Markets Indexes. As shown in **Figure 12**, on page 12, all emerging markets securities (green bar) can be liquidated in less than 0.2 days. However, only 7% of the same portfolio in frontier markets could be liquidated in the same time frame; to liquidate 32% of the portfolio would require up to a full day; and to liquidate 94% of the portfolio would require ten trading days. And since this is a hypothetical example, the cost of the sale (the spread between the bid and ask) as well as any negative price impact due to low volume are not accounted for. These operational hurdles can make managing a large portfolio in frontier markets difficult.

Figure 11. Metrics of financial market development remain low for frontier markets compared with emerging and developed markets

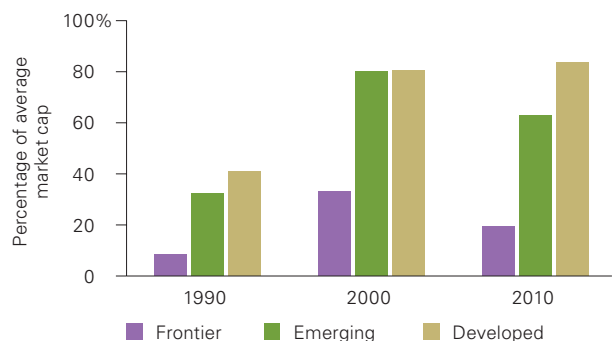
a. Market cap as percentage of GDP



b. Market cap traded as percentage of GDP



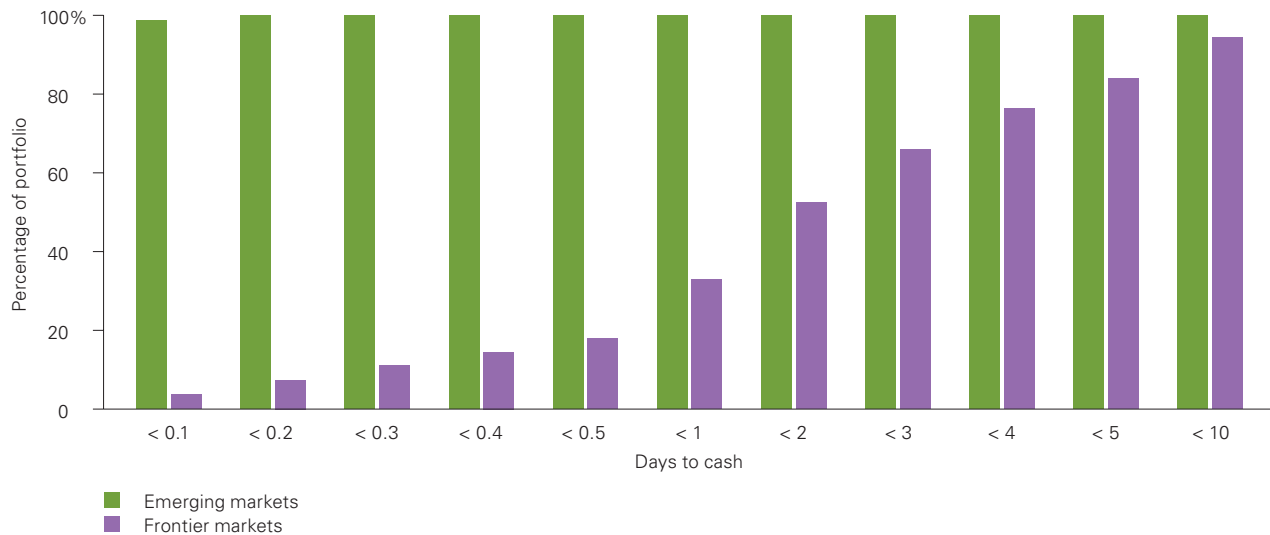
c. Turnover ratio for equities as percentage of average market cap



Notes: Market capitalization is share price times number of shares outstanding and measures only “listed companies,” which are the domestically incorporated companies listed on a country’s stock exchanges at the end of the year, not including investment companies, mutual funds, or other collective investment vehicles. Data are in current U.S. dollars. “Market cap traded” refers to the total value of shares traded during the period. This indicator complements the market-cap ratio by showing whether market size is matched by trading activity. Turnover ratio is the total value of shares traded during the period divided by the average market cap for the period. Average market cap is calculated as the average of the end-of-period values for the current period and the previous period.

Sources: Vanguard, using data from World Bank’s Financial Structure Dataset; see also Beck and Demirgüç-Kunt (2009).

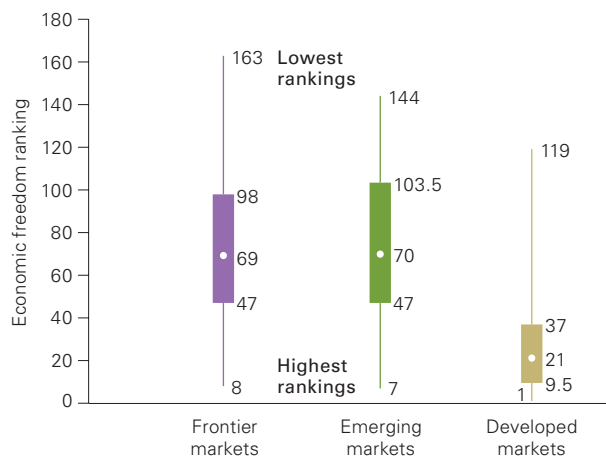
Figure 12. Liquidity differences between emerging and frontier markets



Note: The same liquidity analysis was done for MSCI Frontier Markets 100 Index, producing nearly identical results.

Sources: FactSet and Zephyr Associates' StyleADVISOR.

Figure 13. Range of economic freedom index rankings



Notes: Shaded boxes represent the middle 50% of countries' economic freedom rankings.

Sources: Vanguard, using data from Heritage Foundation.

A final and important concern for investors is the unstable political environment of frontier markets. For example, the Heritage Foundation, a public policy research group, issues "economic freedom scores" using ten economic indicators to rank a country's economic freedom (see Figure 13). According to the foundation's 2012 rankings, although frontier markets exhibited a wider range of scores than emerging markets, the two types of markets were generally rated very similarly. The key distinction occurred between frontier and emerging markets versus developed markets. As Figure 13 shows, developed markets were concentrated among the highest rated countries in terms of economic freedom, whereas both frontier markets and emerging markets generally ranked lower. A recent example in Argentina (cited in this paper's executive summary) illustrates the geopolitical risk commonly faced by investors in frontier markets. In April 2012,

the Argentine government nationalized a controlling stake in YPF S.A., the oil and gas company owned by the Spanish energy giant Repsol. Even though the government did not seize 100% of the shares, the expropriation sent shares falling by more than 30%, representing a real risk to frontier-market investors. Although new indexes may be created to try to address the liquidity issues in frontier-market countries, in our view these countries' political structures still remain the greatest concern for potential investors.

Conclusion

Frontier markets—collectively referred to as a set of countries that fall outside traditional equity indexes—represent a tiny slice of the global equity market. On the surface, frontier markets' expected economic growth and historical risk–return relationships are similar to those of emerging markets. However, questions remain about whether frontier markets can grow large enough to warrant a meaningful allocation in a portfolio. In addition, concerns persist about whether these markets' reduced liquidity and ongoing political risks will continue to overshadow any potential benefits. Although the upside for frontier-market investing may look attractive, the challenges and risks can be significant. For most investors, the downside of frontier-market investing would appear to outweigh the benefits.

References

- Beck, Thorsten, and Asli Demirgüç-Kunt, 2009. *Financial Institutions and Markets Across Countries and Over Time: Data and Analysis*. World Bank Policy Research Working Paper No. 4943. Washington, D.C.: World Bank, May.
- Davis, Joseph H., Roger Aliaga-Díaz, and Liqian Ren, 2009. *What Does the Crisis of 2008 Imply for 2009 and Beyond?* Valley Forge, Pa.: The Vanguard Group.
- Davis, Joseph H., Roger Aliaga-Díaz, C. William Cole, and Julieann Shanahan, 2010. *Investing in Emerging Markets: Evaluating the Allure of Rapid Economic Growth*. Valley Forge, Pa.: The Vanguard Group.
- ExxonMobil Corporation, 2012. *Form 10-K* to Securities and Exchange Commission, Washington, D.C., February 24:14–16.
- LaBarge, Karin Peterson, 2010. *Currency Management: Considerations for the Equity Hedging Decision*. Valley Forge, Pa.: The Vanguard Group.
- Philips, Christopher B., Roger Aliaga-Díaz, Joseph H. Davis, and Francis M. Kinniry Jr., 2011. *Emerging Markets: Individual Country or Broad-Market Exposure?* Valley Forge, Pa.: The Vanguard Group.
- Philips, Christopher B., Joseph Davis, Andrew J. Patterson, and Charles J. Thomas, 2012. *Global Fixed Income: Considerations for U.S. Investors*. Valley Forge, Pa.: The Vanguard Group.
- Speidell, Lawrence, 2011. *Frontier Market Equity Investing: Finding the Winners of the Future*. Charlottesville, Va.: Research Foundation of CFA Institute.



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