

***Risk Outlook for
Country-Specific Funds***

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Markets outside of the United States are expected to generate greater growth than our domestic markets in the future. We have seen out-sized equity market gains in international markets over the past several years, particularly in contrast to the U.S. markets. We have seen higher returns relative to total risk than history suggests are sustainable. No rational investor expects that long-term average gains will continue to run as high as they have been, but foreign economies represent an opportunity that investors cannot ignore. It is important for investors to know that there are country-specific risks that must be considered if you are investing in country-specific funds (as opposed to multi-country funds such as EEM or EFA). Political stability, the long-term swings in commodity prices, and currency volatility all impact the growth prospects and relative risks of investing across a palette of countries. There are also the long-term trends created by globalization—the world is changing and the relative risk/return balance among countries change in response.

Monte Carlo planning tools can be a powerful way to examine the relative risks of various countries, and I have generated an outlook using Quantext Portfolio Planner. A reader recently asked me why forward-looking Monte Carlo models would be of any more value than simply looking at a long market history in assessing risk and return prospects for investments. The case of international markets is a very good one in motivating a response to this question. The future is likely to look different than the recent decades. The major centers for economic growth are not in the U.S. or other ‘developed’ markets. If you simply look at market history to guide investment decisions over the future, your decisions will be predicated on the idea that the future will look like the past. For some things, this is reasonable. For the shifting dynamic between domestic assets, developed country assets, and emerging markets, this is almost certainly not the case.

Professor Campbell Harvey of Duke University has compiled a body of research and a broad set of statistics on the historical risks and returns to investors in different countries. A nice summary table (with data from 1979 through 1995) can be found here:

http://www.duke.edu/~charvey/Country_risk/cct/ccrtab1.htm

These fairly old data give valuable insight into how the risk and return associated with international markets have evolved. Over the period from 1979 through 1995, the United States MSCI equity index generated an average return of 14.8% per year with a standard deviation of 15% per year. This period was one of high returns for U.S. equities (on average), particularly in light of volatility levels—the market delivered a high risk-adjusted return over this period. The observed risk and average return for the markets that Dr. Harvey compiles statistics for are partly a function of that market environment. There is a broad consensus that the higher returns available to investors for taking equity risk will be lower in the future, and this has implications across markets. For more information on the history of the equity risk premium across markets, see the following article:

<http://www.quantext.com/EquityRiskPremium.pdf>

We routinely look at broad market index ETF's to assess risk and to ensure that our portfolio projections using our Monte Carlo simulation, Quantext Portfolio Planner, are consistent with the options market's implied volatility—such as SPY for the S&P500, QQQQ for the NASDAQ, and EEM for emerging markets:

<http://www.quantext.com/MarketRisk3.pdf>

With this type of study, we can look at risk projections into the future and these risk projections help investors in making better planning and allocation decisions.

It is of interest to also look at country specific ETF's, but there are additional uncertainties when we go to that level of disaggregation. The factors that drive the country-specific risk include political risk, credit ratings, and the degree of coupling between the economy in question and other economies. An investor who wishes to explore investing in specific country funds (as opposed to broader funds such as EEM) must take special care. There are a number of questions that are of great interest regarding the future risks in foreign economies.

To start to get our hands around specific risks associated with country-focused ETF's, we can compare the volatility observed in the last several years for country-specific ETF's in

a series of developed and emerging markets to the historical (index) volatility shown in Campbell's analysis. Volatility is described using the *standard deviation* in annual returns (hereafter referred to as SD). If you are not familiar with standard deviation as a measure of risk, you can find discussions in any investing text, but also at investopedia.com:

<http://www.investopedia.com/terms/s/standarddeviation.asp>

When we compare the trailing value of the standard deviation in annual returns over the past several years—a huge rally in international markets—to the statistics from the period compiled by Dr. Harvey, we see a huge difference in many markets (see table below).

A crucial issue for investors is getting a reasonable handle on how risky different countries will be in the future. We can explore that issue using Quantext Portfolio Planner (QPP), a Monte Carlo planning tool. QPP combines recent market history with longer-term statistics for the balance of risk and return in capital markets to derive forward-looking estimates of risk and return. We have applied this capability to simulate the future for a series of country-specific ETF's (with results shown in the table below). To perform this analysis, we chose inputs so that our projections would be consistent with fairly-near term financial options for Japan, Brazil, and the United States (following a standard process). We ended up determining that we would probably do best to use shorter market histories (i.e. two years) because of rapidly changing conditions in developing markets. This is a near-term outlook (next few years) because we chose the historical period and projected future volatility for the S&P500 to try to match the implied volatility in options markets for March 2007. We only looked out to March of 2007 because this is as far out as there are options for EWZ, the Brazil-focused ETF. In our other validation studies, we have been able to use long-term assumptions for the S&P500 and a default of three years of trailing data and we have matched both domestic and emerging market indices very closely:

<http://www.quantext.com/MarketRisk3.pdf>

For trying to capture nearer-term results—limited by the relatively limited liquidity of the options on EWZ—we have had to use more recent data.

iShares ETF	Country	SD in annual Return (1979-1995) from Harvey	Trailing 2 Year SD in Annual Return	QPP Projected SD in Annual Return
EWA	Australia	27%	15%	23%
EWC	Canada	20%	16%	16%
EWD	Sweden	24%	17%	18%
EWG	Germany	22%	13%	18%
EWI	Italy	28%	12%	13%
EWJ	Japan	25%	14%	22%
EWK	Belgium	21%	11%	12%
EWL	Switzerland	19%	12%	14%
EWM	Malaysia	27%	12%	18%
EWN	Netherlands	18%	12%	14%
EWO	Austria	25%	19%	20%
EWP	Spain	24%	12%	13%
EWQ	France	23%	11%	13%
EWT	Taiwan	51%	18%	21%
EWV	Mexico	47%	21%	27%
EWZ	Brazil	64%	32%	50%
EZA	South Africa	27%	28%	30%

Standard deviation in annual return (SD) for country indices from Harvey compared to trailing 2-year results for iShares ETF's (through Aug 2006) and projected future values for these ETF's

We can first compare Harvey's results from 1979 through 1995 to the trailing two-year results for the country-specific ETF's. There is an obvious correspondence—as there should be. The ETF's are designed to track MSCI country indices and Harvey's results rely on MSCI indices. The volatility of these country-specific ETF's (measured by SD) is, in general, far below the values from the last two years. This is not too surprising since U.S. markets have exhibited very low volatility over the past several years. We are in a cyclic down-swing in market volatility. The standard deviation in annual return for the S&P500 over the past few years has been running at about half its long-term average over the past decades.

When we look at the projected future volatility of these countries using QPP (third column above), we find values for the projected near-term volatility (measured by SD) that are between the long-term historical values from Harvey for the indices and the near-term historical results for the ETF's. There are specific details that are of interest. The projected risk for South Africa (EZA) is higher than the recent years or the long-term history, but this is an anomaly. Brazil (EWZ) has the highest projected risk in this list—almost twice that of Mexico (EWW). The historical period analyzed by Harvey preceded the adoption of the Euro. In Harvey's analysis, Italy was more risky than Japan. In recent years, Italy has been less volatile than Japan. In the QPP outlook, Italy's ETF (EWI) is substantially less volatile than Japan (EWJ).

A number of the country specific ETF's are projected by QPP to see large increases in risk—as compared to the last couple of years. Australia (EWA), Japan (EWJ), Malaysia (EWM), and Brazil (EWZ) are projected to see the largest percentage increases in volatility. Canada (EWC), Sweden (EWD), Italy (EWI), and South Africa (EZA) are projected to see the smallest relative increases in volatility.

QPP does not use long-term statistics for the MSCI indices in its calculations. QPP combines the recent data for the ETF's with generic long-term assumptions about the equity risk premium. The equity risk premium represents the amount of extra return that investors can expect to receive for taking on risky assets—such as stocks.

QPP's projected values for SD are better correlated to both the recent historical values for the ETF's and the long-term index data from Harvey than either are to each other:

	Harvey data (1979-1995) with 2 Year History for ETF's	2 Year History for ETF's with QPP Projection	Harvey data (1979-1995) with QPP Projection
Correlation Between SD Values	70%	91%	80%

Correlation between calculated values for SD across the range of countries in this analysis

These results show that QPP's projections capture variations in near-term data for the relative risk across countries as well as the longer-term relationships represented in Harvey's analysis of country risk. This result is a function of the amount of historical data that we used to drive QPP. In these results we have used two years of trailing data (the horizon is a user input). We typically use three years of trailing data, but the rapidly-changing dynamics of country-specific conditions suggest that it is a good idea to look at more recent history in conjunction with the longer-term statistics for the equity risk premium. The very high correlation between QPP's projections and both recent history for the ETF's and the long-term index data from Harvey suggest that QPP is capturing the relative riskiness in different countries over both horizons.

So what does all of this mean for investors? We are in the midst of an impressive bull market across a range of countries. Emerging markets have seen stunning gains over the past three to five years, driven by a variety of factors—not least of which are the current commodities boom and increased interest of investors in emerging markets. For most investors, diversified funds will provide adequate access to foreign investments. Some investors seek to invest in specific countries—and the growing population of country-specific ETF's can support this effort, while keeping costs down. Everyone realizes that investing overseas—especially in emerging markets—carries substantial risk. These are also the economies which are growing most rapidly and offer the greatest potential for growth.

Allocations to specific countries (as opposed to broad international funds) require some care because of country-specific risks. Investors have been rushing to invest overseas without paying enough attention to the risks that they are taking on. While the Brazilian iShares ETF (EWZ) has provided tremendous gains over the past several years, there is a level of risk in Brazil that many investors simply do not grasp. An investment in EWZ at the end of August of 2000 would have lost 69% of its value by the end of September of 2002. Over that same period, the NASDAQ lost 80% of its value. That was at the peak of the technology bubble. We are now in the midst of an enormous run-up in

commodities and emerging market stocks. How much might Brazil drop? A related question is the following. In Harvey's data, Brazil had a standard deviation in annual equity market returns of 64%, far and away the highest in the sample of countries shown above. We have experienced roughly half that level of volatility over the past couple of years. QPP projects that the volatility associated with Brazil has the potential to go up dramatically. Are you willing to bet that the forces that drove the enormous volatility that we have seen in the past in Brazil will not occur again? Are there really structural changes that make Brazil's equity market prospects so different that we could not experience historical levels of volatility?

By contrast to Brazil, consider the QPP projection for Italy (EWI). Italy displayed a high level of volatility in Harvey's data (pre-Euro). In QPP's projections, Italy looks fairly tame. QPP is balancing recent volatility data (post Euro) with long-term data on the equity risk premium and correlations between global markets, and the assessment suggests that Italy is going to be a lot less risky in the future than it was from the 1980's through 1995.

An interesting point of comparison is the historical risk in Taiwan (EWT) vs. Japan (EWJ), as compared to projections. In the longer-term history used by Harvey, Taiwan was more than twice as risky as Japan (SD of 51% in Taiwan vs. 25% for Japan). Using long-term historical data in which Taiwan is twice as volatile as Japan would provide a view of the relationship between world economies that is biased to the way the world used to be.

The point of these examples is not to suggest that any model will be able to accurately forecast the future risk in investing in a specific country. Rather, models can provide an objective viewpoint that combines recent evidence on the risks associated with specific countries with long-term data on the risk and returns associated with capital markets to provide investors with insight into how risky their investment are.

Investors will increasingly look overseas to diversify their portfolios, but we cannot simply look to long-term history to be our guide in determining the potential risks. We know that we need more information than simply looking at recent history, too. The global economy is changing the relative risks associated with different countries. The forces that determine the ups and downs of the global economy evolve over decades and there are real secular shifts in the competitive positions of individual countries as well as in the potential for volatility. How can you deal with all of that? The best approach is to combine long-term data on the equity risk premium with more recent data on individual countries' volatility and an outlook for broader market volatility (which has been in ebb over the past several years). The only way to account for all of these factors is to use quantitative models. The models need to be consistent with long history and recent history. QPP accomplishes this (see the correlations in the table above). QPP's estimates of the relative risk in different economies can help investors as they attempt to find the best risk/return balance for their portfolios.

To account for total portfolio effects of allocations to individual countries also requires that you be able to account for the inter-relationships between the performances of these countries. QPP accounts for these effects and this will be the topic of a future article.

Quantext Portfolio Planner is a Monte Carlo portfolio management tool. Extensive case studies, as well as access to a free extended trial, are available at <http://www.quantext.com/gpage3.html>