

First Quadrant Emerging Market Debt

FQ Insight

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Strategy Overview

The First Quadrant Emerging Market Debt (FQ EMD) strategy's objective is to provide risk-controlled access to emerging-market growth in a liquid format.¹ The product aims to capture relative productivity gains in emerging markets expressed through local debt and currency appreciation. By mixing currency exposure with local debt, we seek to provide a cost-efficient and flexible mechanism for participating in emerging markets while allowing fine-tuned management of the investments. The approach tilts exposures away from countries that have large debt markets because their governments have run large deficits toward more conservatively run economies with better growth prospects. Using currencies as the main investment vehicle also provides us with liquid instruments with which to adjust the portfolio in reaction to risks and opportunities. The approach provides clean access to macro opportunities in emerging markets while substantially limiting exposure to country or issuer specific changes in, for example, regulatory environment, corporate governance structures, taxes, etc.

The FQ EMD strategy combines risk parity techniques with regime-based dynamics, strict turnover controls, and tail-risk hedging to deliver emerging market exposure while also providing a number of other potential benefits:

- Competitive risk-adjusted return as compared to standard EM local currency benchmarks
- Significant improvement in the quality of the ride with a more predictable realized portfolio volatility and risk-adjusted return
- Significantly lower drawdown (reduced left tail risk)
- High liquidity of underlying portfolio
- Limited exposure to attachment risk, changes in local taxes, regulatory environment, government issuance policy etc.
- Flexibility in terms of universe selection
- Capital efficiency gains for investors with risk-based capital requirements

Compared to typical emerging market local currency debt indices, we believe that, based on simulated results, the FQ EMD strategy provides comparable risk-adjusted returns with what we consider a much more compelling risk profile.

TABLE 1: EM DEBT BENCHMARK SUMMARY COMPARISONS (January 2003 – July 2012)

	FQ EMD (Simulated) ²	ELMI+ ³	GBI-EM ⁴
Information Ratio	0.8	0.9	1.0
Average Annualized Return	7.5%	7.5%	12.6%
Average Annualized Risk	8.4%	8.4%	12.6%
Maximum Drawdown	-9.5%	-24.9%	-29.5%

Sources: First Quadrant, LP, WMR/Reuters, Bloomberg LP

While we have chosen the JP Morgan GBI EM debt index and the JP Morgan ELMI+ index here as comparison, the results hold across a wide array of emerging market indices.

Past performance is no guarantee of future results. Potential for profit is accompanied by possibility of loss. Commodities trading involves substantial risk of loss.



Strategy Design

The design of the FQ Emerging Market Debt (FQ EMD) strategy follows to a large degree the design of our Essential Beta offerings⁵; first, find, and invest in, the essential beta component; second, allocate capital proportional to the riskiness of the assets; third, adjust exposures over time to take time variation of risk into account. For the FQ EMD strategy this implies constructing a portfolio of essential betas (currency and duration) where the allocation to currencies is driven by their relative riskiness, and the allocation to specific fixed income instruments is driven by their yield and tail hedging characteristics, but importantly not by credit exposure (all duration is taken in AAA instruments). Finally, total portfolio risk is adjusted over time according to the developments in the FQ Market Risk index (MRI): the same risk index that drives the relative allocation to different asset classes in our Essential Beta offerings.⁶

Currency Component

In the first step, we adjust the currency exposures to achieve an equal allocation in risk terms to each country. This significantly alters the risk profile compared to the exposure that comes from traditional emerging market fixed income indices, where allocations typically are driven by market capitalization. The approach reduces the exposure – as expected – to markets with relatively large Debt to GDP ratios.

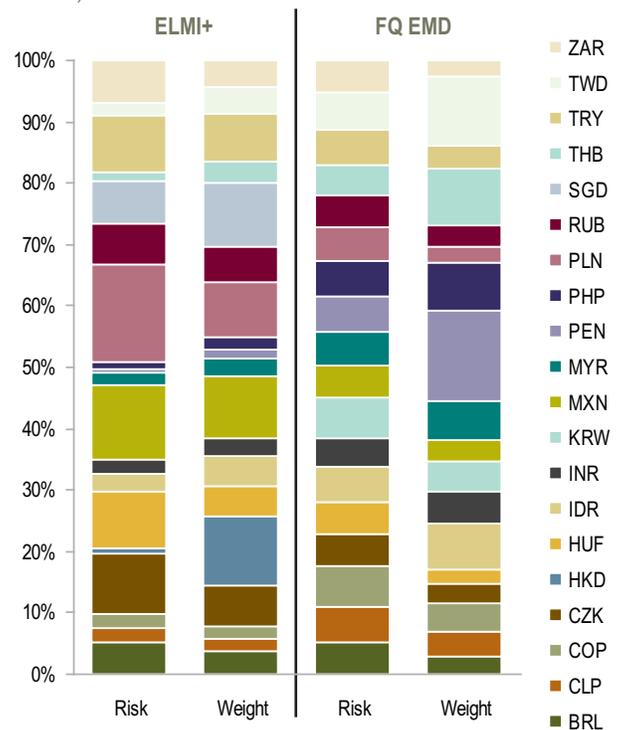
June 2012	ELMI+ Weights	Public Debt to GDP Weights
Hong Kong	9.9%	31.6%
Singapore	9.3%	99.7%
Mexico	8.9%	42.9%
Poland	7.8%	55.7%
Turkey	7.0%	36.0%
Czech Republic	6.0%	43.9%
China	5.4%	22.0%
Russia	5.0%	8.4%
Hungary	4.3%	76.3%
Indonesia	4.3%	67.6%
Taiwan	3.8%	42.5%
South Africa	3.7%	40.0%
Brazil	3.2%	65.1%
Thailand	3.0%	43.5%
India	2.7%	23.2%
Malaysia	2.5%	53.1%
Romania	2.4%	34.2%
Israel	2.3%	74.0%
Argentina	1.8%	43.3%
Chile	1.8%	10.1%
Colombia	1.8%	32.3%
Philippines	1.7%	40.1%
Peru	1.4%	20.7%
Top 5 Countries	42.9%	53.2%

Sources: JP Morgan and IMF

The FQ EMD strategy reduces the weighted average debt to GDP ratio from 47% in ELMI+ to 40% in FQ EMD. The 5 largest positions (in notional terms) average debt to GDP ratio is 53% in ELMI + and 43 % in the FQ EMD strategy.

More importantly, the concentration of risk changes dramatically. In FQ EMD, we have 18 currencies, and so our 5 largest positions account for 28% of the risk (each contributes equally 1/18th of the risk), whereas in ELMI+ they account for 45% percent of the risk. As the figure below shows, while the weights in the two portfolios might be different, the risk contribution due to the positions in FQ EMD is very uniform, while in ELMI it is not.

FIGURE 1: CAPITAL AND RISK ALLOCATION (June 2012)



Sources: First Quadrant, LP, WMR/Reuters, JP Morgan

Bond Component

In the second step, we build a portfolio using two types of cash debt instruments: a portfolio of AAA rated bonds denominated in emerging market currencies issued by Supranationals (i.e. the World Bank, IFC, EBRD, etc), and a portfolio of developed market bonds.

The emerging-market denominated debt increases portfolio yield (typical coupons are currently between 5 and 7 percent), while maintaining the underlying principles of only taking very well defined emerging-market risks in an “unbundled” fashion (to avoid being exposed to risks we don’t under-



stand or don't like, just because the risks are embedded in the instruments we happen to trade), and taking the largest emerging market risks in the most liquid of available instruments (to allow us to react to changes in risk in a cost efficient manner rather than being caught in an illiquidity trap at the most inopportune moment).⁷ The developed-market bond component allows us to adjust the overall portfolio duration to match underlying benchmarks (if that is required) and, more importantly, to provide a hedge for negative market shocks. This part of the portfolio aims to provide value added when it comes to the quality of the ride. We note that this makes our portfolio possibly more defensive than some of the aggressive EM debt products that exist. However, it is our philosophy that rather than try to maximize return, at the expense of risk control, we would rather keep our clients in the game with consistent EM exposure.

Risk Regiming

In the third step, we adjust overall portfolio exposure based on the developments in the FQ MRI. In higher risk regimes, the allocation to developed market cash bonds is increased and the risk exposure to EM currencies is reduced. In low risk regimes, the proportion of developed market cash bonds is reduced and the risk exposure to EM currencies is increased. The FQ MRI operates with five different regimes: very high risk, high risk, median risk, low risk and very low risk. The risk adjustments for the FQ EMD strategy are most pronounced in the very high risk and very low risk regimes, while the differences in portfolio construction in the intermediate regimes are subtler. The reason for this distinction lies in the way markets have a tendency to overshoot both in terms of overly optimistic assessments in low risk environments and overly pessimistic in high risk environments.

Each of the three steps aims to provide value added but in various ways. As will be shown in the section on simulated performance below, the risk balancing step may contribute mostly to controlling risks in normal times, while the addition of developed market bonds and the risk balancing according to the FQ MRI may help reduce the negative tails in the distribution.

Performance

In this section, we describe a simulation of performance for the FQ EMD portfolio.⁸ The FQ EMD strategy is systematic in its construction with live performance in line with the simulation.⁹ The simulation is a conservative representation of the actual portfolio as we have left out the supranational cash debt part of the portfolio, which would have increased portfolio yield substantially.

The FQ EMD simulated strategy delivers an average annualized return of 7.5% with a volatility of 8.4% for an IR of 0.9.

Compared to ELMI and GBI-EM the strategy delivers the same IR with improved skew, significantly less kurtosis, a more attractive semi-variance¹⁰ and a maximum drawdown that is half the size of the benchmarks.

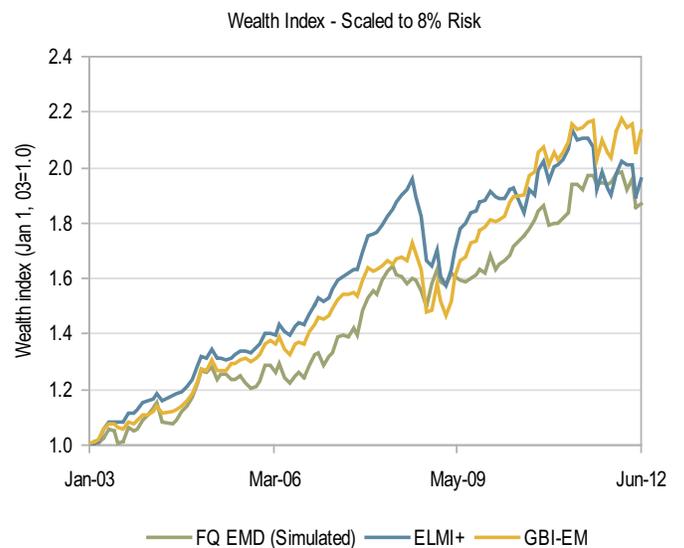
TABLE 2: EM DEBT BENCHMARK COMPARISONS
(January 2003 – July 2012)

	FQ EMD (Simulated) ²	ELMI+	GBI-EM
Information Ratio	0.8	0.9	1.0
Kurtosis	0.3	2.6	2.6
Skew	-0.3	-1.2	-0.9
Semi-variance	0.9	1.0	2.1
Average Annualized Return	7.5%	7.5%	12.6%
Average Annualized Risk	8.4%	8.4%	12.6%
Maximum Drawdown	-9.5%	-24.9%	-29.5%

Sources: First Quadrant, LP, WMR/Reuters, Bloomberg LP

The figure below shows the wealth index, if one invested \$1 at the beginning of the simulation period in the various portfolios. Note, to make these results more comparable we have scaled the return series down to 8% risk, as that is the more common level of risk between FQ EMD and ELMI+.

FIGURE 2: CUMULATIVE RETURN FOR SELECT EM DEBT INDICES
(January 2003 – July 2012)



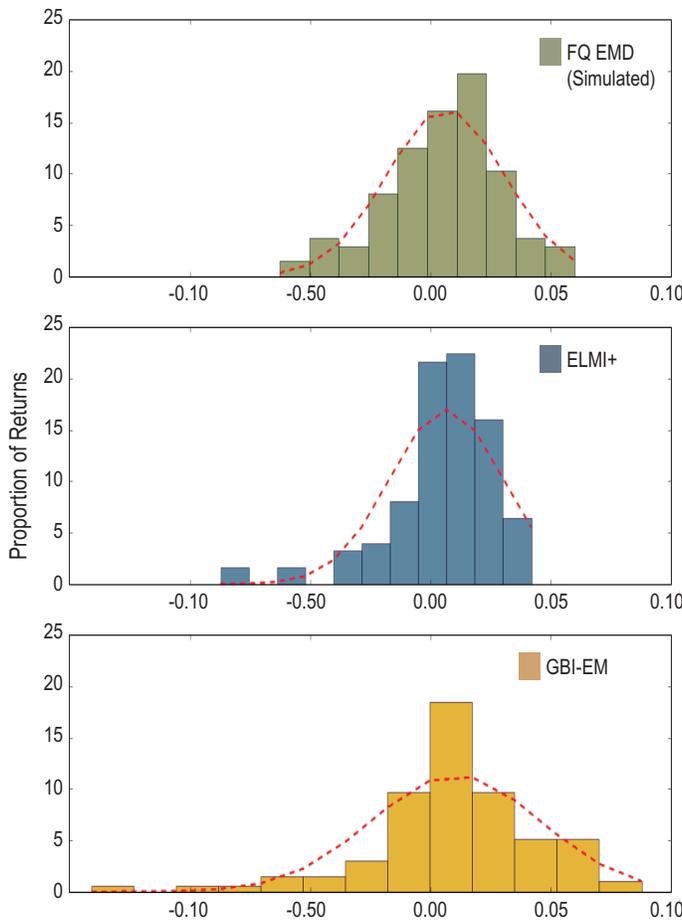
Sources: First Quadrant, LP, WMR/Reuters, Bloomberg, LP

At a first glance, the GBI-EM index widely outperforms both ELMI+ and the FQ EMD strategy. However, most of this outperformance is directly related to a higher risk level; both

ELMI+ and the FQ EMD strategy have realized volatility of around 8.4% annually, while GBI-volatility is 12.6%. On a risk adjusted level (as shown, for example, in the IR numbers), performance of the 3 indicies are alike. However, when it comes to performance in times of trouble, the FQ EMD strategy, as intended, dramatically outperforms both ELMI+ and GBI EM. The maximum draw-downs for the ELMI and GBI benchmarks are almost 2.5 and 3 times larger than FQ EMD, respectively. In fact, the “ride” of the FQ EMD portfolio appears much smoother in this plot.

To make this point even more clearly, consider the plot below showing the return distributions for each of the portfolios. It is clear that the benchmarks exhibit much more left-tail risk and the FQ EMD portfolio looks more “normal.”

FIGURE 3: RETURN HISTOGRAMS FOR SELECT EM DEBT INDICES
(January 2003 – July 2012, Monthly Returns)



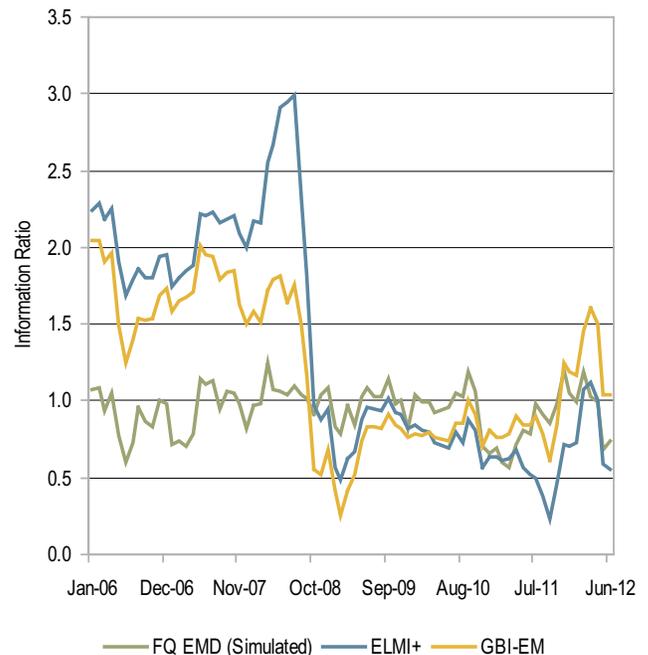
Sources: First Quadrant, LP, WMR/Reuters, Bloomberg, LP

This plot makes clear the issue with skew, and especially kurtosis in the left tail. The benchmarks ELMI+ and GBI-EM have left tail returns that stretch out significantly farther

to the left than the FQ EMD portfolio. This is due to the risk control mechanisms in place for FQ EMD strategy. In volatile markets, such as emerging markets, while the lure of returns is strong, investors must be particularly careful of left-tail risks, as they do not want to be caught in downturns that are difficult to exit due to costs, local market liquidity and other idiosyncratic risks. Therefore, FQ EMD aims to provide much of the emerging market exposure in return space, but with left-tail management that aims to mitigate these issues.

Finally, the FQ EMD portfolio seeks to provide a much smoother “ride,” especially in risk-adjusted return experience. It is our belief that FQ EMD should be managed to a three-to-five year market period, and so below we present the three-year rolling information ratio. There are two main takeaways from this plot. First, for the simulated period, the FQ EMD portfolio’s information ratio never drops below 0.5. Even during the crisis, it delivers similar performance as to the period prior. Second, the variation in the FQ EMD portfolio’s value is significantly less than the other portfolios. Its “wobble” is much less severe, providing a smoother experience for investors over the lifecycle we believe is appropriate.

FIGURE 4: ROLLING 36 MONTH INFORMATION RATIO FOR SELECT EM DEBT INDICES
(January 2003 – July 2012)



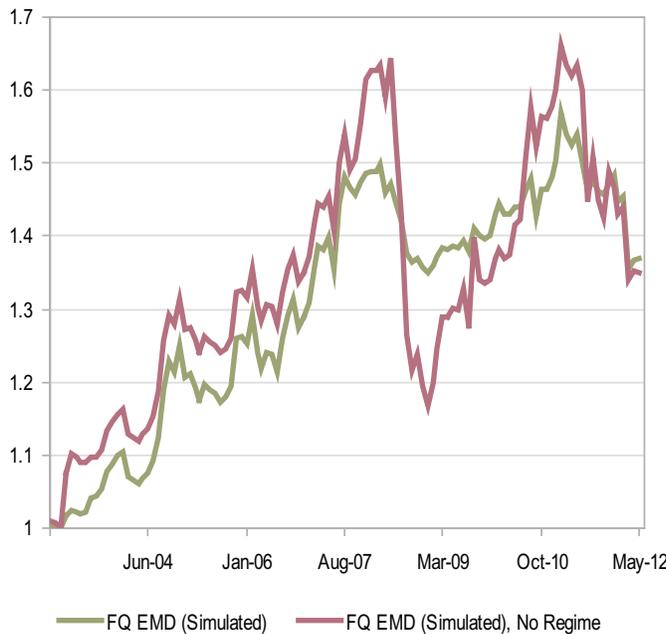
Sources: First Quadrant, LP, WMR/Reuters, Bloomberg, LP

Part of the reason why the FQ EMD performs relatively better in “risk off” situations is driven by its incorporation of



regime-based dynamics to help determine when the portfolio should take more risk, and when the portfolio should ease back. The figure below shows how FQ EMD performs both with the regime-based dynamics, and without. The main difference in the strategies is “quality of ride” which is reflected in risk-adjusted return. Specifically, using regime-based dynamics, FQ EMD stoically weathers the large draw-downs in risky periods, such as those in 2008 and 2011. Similar to most other EM investments during that period, however, the non-regime based FQ EMD viciously does not. This is exactly in line with our philosophy outlined above: the goal is not to provide the highest absolute return; the goal is to provide the highest possible return while keeping investors in the game of EM exposure (and its return) over the long run.

FIGURE 5: FQ EMD REGIME BASED DYNAMICS (SIMULATED)
(January 2003 – July 2012)

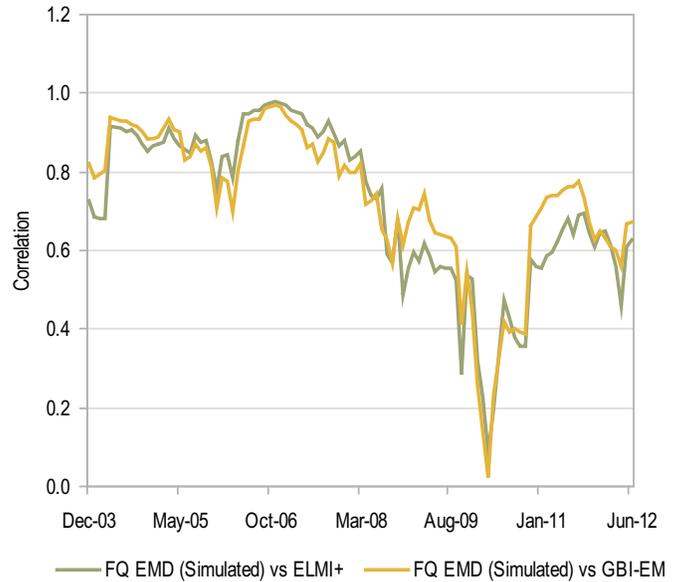


Source: First Quadrant, LP

By making these adjustments to the portfolio, the remaining question is whether we have lost sight of the primary objective: to gain access to the essential beta of Emerging Markets? We can control risk, but have we done that at the expense of exposure to our chosen beta?

The plot below shows the rolling one-year correlations between FQ EMD and the benchmarks. During the period of the simulation, the correlations between FQ EMD and the ELMI and GBI-EM benchmarks are 0.62 and 0.67 respectively. That the full-period correlations are not higher reflects FQ EMD’s risk control during extremely risky times. Below we show the plot of rolling, one-year correlations.

FIGURE 6: ROLLING 12 MONTH CORRELATIONS OF FQ EMD AND SELECT EM DEBT INDICES¹¹
(January 2003 – July 2012)



Sources: First Quadrant, LP, Bloomberg, LP

There are two aspects to note about the one-year correlations. First, during periods of relative market calm, such as between 2004 and the beginning of 2007, the FQ EMD portfolio is extremely correlated to the benchmarks, providing as much emerging market exposure as it can during these “risk-seeking” times. Second, once the markets begin to roil, such as during the Global Financial Crisis, the FQ EMD product’s risk-control begins to kick in and it diverges significantly from the benchmarks, only re-aligning its exposure as the markets begin to calm (relatively speaking). This plot demonstrates clearly the two main benefits of the FQ EMD product: emerging market exposure with active risk-control.

In fact, although FQ EMD is correlated with the EM benchmarks, it potentially can provide even more diversification benefit for a portfolio than the benchmarks. The table below shows the full period correlations between FQ EMD and the benchmarks versus three standard indices that represent portfolio allocations: S&P 500 for equity exposure, WGBI 7-10 index for developed market bond exposure, and the GSCI index to represent commodity exposure.

As the table shows, against the “riskier” assets, commodities and equities, FQ EMD provides a much lower correlation than the EM benchmarks. Against the WGBI index, the correlation is higher, but this is due to the duration component in the fixed income portion of FQ EMD.



TABLE 3: CORRELATION COEFFICIENTS
(January 2003 – July 2012)

	FQ EMD (Simulated)	ELMI+	GBI-EM	GSCI (ER)	WGBI 7-10 (TR)	S&P 500 (TR)
FQ EMD (Simulated)	1.00	0.62	0.67	0.17	0.45	0.26
ELMI+		1.00	0.94	0.49	0.00	0.71
GBI-EM			1.00	0.39	0.12	0.69
GSCI (ER)				1.00	-0.22	0.41
WGBI 7-10 (TR)					1.00	-0.23
S&P 500 (TR)						1.00

Sources: WMR/Reuters, Bloomberg LP, Datastream

Conclusion

The First Quadrant Emerging Market Debt strategy aims to provide risk-controlled participation in emerging market growth. By actively managing risk exposure both intra-country and over time, we aim to provide a more balanced and continuous growth exposure. We believe emerging market participation is a must for global portfolios going forward, and the key to this participation is to recognize the difficulties and risk in this exciting market, and structuring the participation to avoid being “stopped out” during difficult periods.



Endnotes

¹ In a forthcoming FQ white paper on the common beta in Emerging Markets show how the idiosyncratic risk in the main EM debt and equity indices can be traced back to a growth component which, in turn, can be captured in large part by investing in EM currencies.

² For full disclosure of the FQ EMD simulation see **Disclosures - FQ Emerging Market Debt - Simulated Performance**.

³ The JP Morgan Emerging Local Markets (ELMI) Index tracks US Dollar total returns for local currency denominated money market instruments in 24 emerging markets. This includes coverage of the following: Argentina, Brazil, Chile, China, Czech Republic, Egypt, Greece, Hong Kong, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Philippines, Poland, Russia, Singapore, Slovak Republic, South Africa, Taiwan, Thailand, Turkey and Venezuela. JPMorgan is a trademark of JPMorgan Chase & Co.

⁴ The JP Morgan Government Bond Index - Emerging Markets (GBI EM) is a definitive local emerging markets debt benchmark that tracks local currency government bonds issued by emerging markets. The diversified index caps country weights at 10% and redistributes the excess to countries with market capitalization of less than 10%, in accordance to their relative sizes. The index is unhedged and expressed in USD. JPMorgan is a trademark of JPMorgan Chase & Co.

⁵ See FQ Perspective: “Balancing Betas. Essential Risk Diversification” by Ed Peters (http://www.firstquadrant.com/downloads/2009_02_Balancing_Betas.pdf)

⁶ See FQ Perspective: “Using Volatility Regimes: The FQ MRI (Market Risk Index)” by Ed Peters (http://www.firstquadrant.com/downloads/2009_09_Using_Volatility_Regimes.pdf)

⁷ We believe managing transaction costs is an important but often overlooked consideration to managing any EM portfolio, and our approach aims to minimize much of that cost not only in “normal times” but when it really matters in “risky times” when everybody is headed for an increasingly small exit. By using currencies and bonds to carefully construct the portfolio for risk management, we are also able to more carefully control transaction costs also in periods of stress.

⁸ The target realized annual volatility for the FQ EMD strategy is 12%, in line with the emerging market debt portfolios. Also, in line with most other work on emerging markets, our simulation begins in January of 2003 and runs until June of 2012. All of the results are monthly.

⁹ The currency component of the strategy has been traded live in our Essential Beta strategy since March of 2012. Before then the strategy was paper traded to verify the robustness of the design.

¹⁰ Semi-variance is considered a measure of left-tail risk. It measures the variance of all returns that fall below the mean, and so larger numbers indicate a larger possible loss.

¹¹ Gross to net conversion. The JP Morgan Government Index (GBI – EM) and the JP Morgan Emerging Local Market (ELMI+) Index have been converted from gross of fees to net of fees, to reflect the reasonable swap rate for purchasing these indices. The swap rate used is the same fee structure as the FQ Emerging Market Debt – Simulated performance (Net of Fees).



Disclosures

FQ Emerging Market Debt – Simulated Performance (Net of Fees) *Unless otherwise noted, performance figures do not reflect the deduction of investment advisory fees. These fees are described below. The returns shown will be reduced by the advisory fees and any other expenses the advisor may incur in the management of an investment advisory account. **Simulated performance is no guarantee of the future results in a live portfolio using the strategy. Potential for profit is accompanied by possibility of loss.** General Disclosures:* Hypothetical or simulated performance results have certain inherent limitations. Unlike an actual performance record, simulated results do not represent actual trading. Also, since the trades have not actually been executed, the results may under or over compensate for the impact, if any, of certain market factors, such as lack of liquidity or changes to capital controls. Simulated trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. Further, backtesting allows the security selection methodology to be adjusted until past returns are maximized. No representation is being made that any account will or is likely to achieve profits or losses similar to those shown. Unless otherwise noted, performance returns for one year or longer are annualized. Performance returns for periods of less than one year are for the period reported. The simulated performance used in this presentation will differ from live performance experienced using the strategy for the following reasons: • The simulated performance was derived from the “backtesting” or the retroactive application of signals generated from FQ’s current proprietary model. Simulations are constructed on the basis of historical data and based on assumptions integral to the model. • The simulation assumes that the strategy guidelines are constant through the life of the portfolio whereas the guidelines for live portfolios may change over the life of each portfolio. • The simulation assumes fixed transaction costs whereas live portfolio transaction costs will be variable, and dependent on portfolio size. • The simulation uses a synthetic index (open interest weighted 10 year US Treasury futures) to generate US treasury returns on cash with interest compounded daily. The actual US treasury return can vary from the synthetic index returns used in the simulation. **Disclosures Specific to Simulation: (Creation Date: May 2012)** The simulation is constructed with the goal to diversify risk in a portfolio by strategically allocating risk to the following emerging market currencies using forwards and spot (where noted) as forwards were not available for the duration of the simulation for specified currencies: Brazil (spot), Chile (spot), Colombia (spot), Czech Republic, Hungary, India, Indonesia, Malaysia, Mexico, Peru (spot), Philippines, Poland (spot), Russia (spot), South Africa, South Korea (spot), Taiwan, Thailand, and Turkey. The simulation changes overall portfolio risk allocations based on pre-determined indicators of market risk which change over time. A return from 10 year US treasury futures is added to the simulated returns from currencies. The results are compounded assuming reinvestment of returns, including returns from interest and capital gains. The strategy is not exposed to withholding taxes. **Market Impact on Returns:** The results of the strategy were significantly impacted by the way the strategy managed through the emerging equity market downdraft and subsequent rebound from July 2008 to December 2009. **Investment Management Fees:** Fees are charged at the total strategy level. All simulated performance results presented are net of fees and after transaction costs. The FQ investment management asset-based fee schedule for this strategy, which is negotiable, is as follows: \$0–\$100, 0.40%; \$100–\$350, 0.35%; and more than \$350, 0.20%. Asset-based fees are charged incrementally. For example, a \$500 million dollar portfolio will be charged 0.40% for the first \$100 million, 0.35% for the next \$250 million, and 0.20% for the last \$150 million. This simulation assumes an investment of USD 500 million with an annual advisory fee of 0.315%