INSTITUTIONAL ADVISORY & SOLUTIONS

Executive Summary

EMERGING MARKET EQUITY BENCHMARKS FOR JAPANESE INVESTORS

Countries, Sectors or Styles?

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For Japanese investors considering adding emerging market (EM) equities to their portfolios, what type of baseline EM exposure might be most suitable?

We show that a traditional, "off-the-shelf" market-capitalization EM benchmark (e.g., MSCI EM Index) may not be best-suited. For example, the MSCI EM Index has more than 50% of its market value represented by just three countries: China, Korea and Taiwan. After the United States, these three neighboring countries are the largest export destinations for Japan. In addition, almost 50% of the traditional EM benchmark is represented by exposure to just two sectors: Financials and Technology. These two sectors are also heavily represented in developed equity markets (including the Japanese domestic equity market), with more than a 30% combined weight. Why not design an EM benchmark that will more likely give Japanese investors diversified sources of performance that they are seeking?

Based on research showing that EM returns are influenced by sector and style exposures, in addition to country exposures, we propose "country-based", "sector-based" or "style-based" **alternative EM benchmarks** that have provided better diversification, risk-adjusted returns and lower performance drawdowns for Japanese investors compared to a traditional EM benchmark.

Given a desired exposure metric (e.g., country, sector or style), how can these exposures be combined into a better benchmark?

A traditional EM benchmark uses market capitalization weights. However, we consider alternative weighting schemes that might provide better risk and return properties that more appropriately fit the investor's overall portfolio. We consider two alternative weighting schemes: equal risk contribution ("ERC") weights and equal weighting ("EW"). ERC (also known as "risk parity") is not new and has been well-studied. ERC produces a risk-balanced benchmark such that each group's contribution to the benchmark's overall risk (volatility) is the same for all groups in the benchmark. There are many other potential exposure weighting schemes, and some may work better than others depending on the economic regime. However, we choose to examine ERC and EW due to their long history and their focus on risk control, which may be desirable for new investors in a volatile asset class such as emerging market equity.

Role of EM in Japanese Investor Portfolios

We first examine the case for adding EM exposure to a Japanese portfolio. For our analysis, we assume a sample Japanese portfolio allocation represented by a 50% DM equity allocation (25% in domestic (i.e., Japanese) equities and 25% in DM ex-Japan equities) and a 50% bond allocation (35% in Japanese Government Bonds (JGBs) and 15% in global government bonds ex-Japan). For our initial analysis, we assume EM is represented by the MSCI EM Index, and that all foreign equity and bond allocation in the Japanese portfolio is unhedged.

What happens to the risk and return characteristics of a Japanese investor's portfolio as the EM allocation increases from 0%? To answer that we specify which existing portfolio allocation is reduced to make room for the new EM allocation. This is an important issue, as a reduction of Japanese equities and/or JGBs and an increase in EM means that the Japanese investor is also increasing foreign currency exposure. To keep the allocation to yen and equities unchanged, we assume EM allocation is made by reducing allocation to DM ex-Japan. Figure 1A and 1B show, historically, how the overall portfolio's performance would have changed as the allocation to EM was increased. Overall, we see that a Japanese investor could have benefitted from an allocation to EM equities.

Figure 1A: Returns (annualized) – Allocation to EM Equities
(unhedged JPY returns; February 2002 – January 2017)

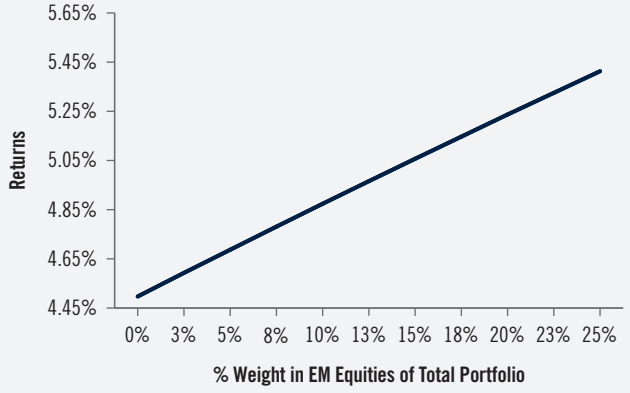
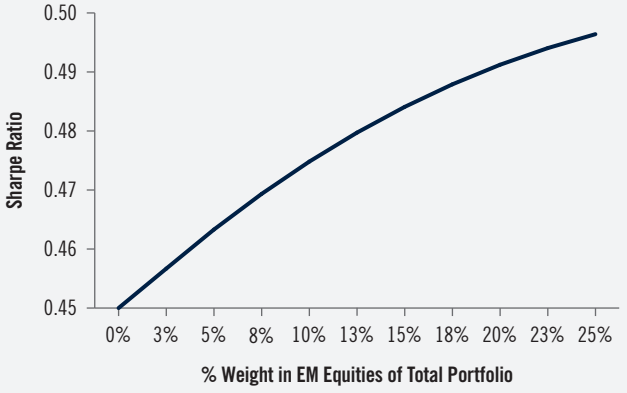


Figure 1B: Sharpe Ratio (annualized) – Allocation to EM
(unhedged JPY returns; February 2002 – January 2017)



Note: Past performance is not a guarantee or a reliable indicator of future results. Chart is provided for illustrative purposes only and does not contain actual results or characteristics of any PGIM-managed portfolio.
Source: PGIM IAS, Datastream, MSCI, and S&P Capital IQ

Alternative EM benchmarks for Japanese investors

A cap-weighted EM index has drawbacks. For example, as mentioned above, the traditional EM index has significant country and sector concentrations that may be undesirable for a Japanese investor.

If not a traditional market-cap EM benchmark, what type of benchmark might be more suitable for Japanese investors? We first consider an EM benchmark that continues to group stocks by country exposures, as does a traditional EM benchmark. But rather than using market capitalization weights, the alternative benchmark uses either ERC or EW for the benchmark's construction. We call these "country-based alternative" benchmarks to distinguish them from a traditional EM benchmark.

As a second benchmark alternative, we group EM stocks first by sector exposure, irrespective of country. For example, an Indian technology stock and a Brazilian technology stock would be assigned to the same EM technology sector (using market capitalization weights). Then, to construct the alternative benchmark, we again combine the various sectors using ERC or EW. We call these "sector-based alternative" benchmarks.

As a third alternative, we take advantage of academic research that has identified style exposures (e.g., momentum and value) as drivers of equity returns. Research suggests economic or behavioral motivations that allow stocks with these style exposures to generate positive, risk-adjusted returns over time. To construct "style-based alternative" benchmarks, we first classify stocks from a country into style groups depending on their exposures to these styles (using market capitalization weights). Then, we combine these style groups across countries using ERC or EW.

Performance comparison of EM benchmarks

All three alternative benchmarks using ERC were highly correlated with the traditional EM index, suggesting that they all adequately captured exposure to the EM market (Figure 2). However, all three alternative benchmarks had better absolute and risk-adjusted performance compared to the traditional EM benchmark. In addition, all three alternative benchmarks had lower absolute return maximum drawdowns, reflecting the contribution of ERC in helping to control risk. The sector-based alternative benchmark had the lowest risk and maximum drawdown, but also the lowest return.

Figure 2: Equal Risk Contribution Weighted EM Benchmarks – Performance Metrics
(unhedged JPY returns; February 2002 – January 2017)

	Benchmarks (Equal Risk Contribution)			Benchmarks (cap-weighted)		
	EM Countries	EM Sectors	EM Styles	EM Equities	Japan Equities	DM Equities
Returns (Annualized)	11.6%	9.7%	11.4%	8.7%	4.5%	5.6%
Risk (Annualized)	23.3%	22.4%	22.8%	24.1%	18.4%	19.0%
Sharpe Ratio (SR)	0.49	0.42	0.49	0.35	0.23	0.28
p-value (SR diff)	0.00	0.08	0.07			
Correl to EM	0.99	0.99	0.98	1.00	0.72	0.88
Max. Drawdown	–66.1%	–64.2%	–66.1%	–68.2%	–57.3%	–61.2%

Note: We ignore transaction costs from monthly rebalancing back to ERC weights for the three alternative EM benchmarks. However, performance metrics are reported after deducting estimated transaction cost for country-level style groups, which unlike country or sector market cap-weighted groups, have higher turnover. We estimate transaction costs using average turnover, bid-ask spreads and taxes. We estimated the cost to be 1%/y for EM Styles. Past performance is not a guarantee or a reliable indicator of future results. Chart is provided for illustrative purposes only and does not contain actual results or characteristics of any PGIM-managed portfolio.
Source: PGIM IAS, Datastream, MSCI, and S&P Capital IQ

Alternative EM benchmark in Japanese investor portfolios

Figure 3: Sample Portfolio Allocation for a Japanese Investor – Performance Metrics EM Equities at 5% Allocation
(unhedged JPY returns; February 2002 – January 2017)

	Plan without EM Equities	Plan with Traditional EM Equities	Plan with EM Countries	Plan with EM Sectors	Plan with EM Styles
Returns (Annualized)	4.50%	4.69%	4.81%	4.72%	4.80%
Risk (Annualized)	9.59%	9.71%	9.68%	9.65%	9.66%
Sharpe Ratio (SR)	0.45	0.46	0.48	0.47	0.48
p-value (SR diff)		0.45	0.14	0.26	0.17

Note: Country, Sector and Style EM benchmarks are ERC weighted. We ignore the transaction costs from monthly rebalancing of the benchmarks to ERC weights. However, performance metrics are reported after deducting estimated transaction costs for country-level style groups, which unlike country or sector market cap-weighted groups, have higher turnover. The transaction costs are estimated using average turnover, bid-ask spreads and taxes. We estimated the cost to be 1%/y for EM Styles. Past performance is not a guarantee or a reliable indicator of future results. Chart is provided for illustrative purposes only and does not contain actual results or characteristics of any PGIM-managed portfolio.
Source: PGIM IAS, Datastream, MSCI, and S&P Capital IQ

To keep the allocation to yen and equities unchanged, we assume the EM allocation is made by reducing the allocation to DM ex-Japan from the sample Japanese portfolio. To assess relative risk-adjusted returns we allocate 5% from DM ex-Japan equities to EM equities (i.e., 10% of the overall equity allocation). We also incorporate transaction costs. We find that using any of the four EM benchmarks (i.e., the three alternative ERC benchmarks and the traditional EM benchmark), both risk and return increased (Figure 3.) The best absolute and risk-adjusted performance improvement came from using the country-based alternative benchmark (Sharpe ratio improvement of 0.03 and an absolute improvement of 31bp, 4.81% vs. 4.50%).

Conclusion

For Japanese investors, adding EM equities in lieu of DM ex-Japan equities increased portfolio risk, but it came with a two-fold benefit: portfolio diversification and performance enhancement. Japanese investors may find limited improvement in their overall portfolio's risk-adjusted returns using a traditional market capitalization EM benchmark to serve as their baseline allocation. Instead, they may have done better using an alternative EM benchmark. While all three alternative benchmarks had better performance than the traditional EM index, the country-based and style-based alternative benchmarks performed better than the sector-based alternative benchmark. With the trend of improved EM equity data and coverage, and reduction of transaction costs, Japanese investors may wish to consider adopting an alternative EM benchmark for their new EM allocation.

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