



Strategic Investment in Emerging Markets

The role of emerging markets in a long-term portfolio

FOR INSTITUTIONAL INVESTORS ONLY - NOT FOR USE BY OR DISTRIBUTION TO RETAIL INVESTORS

J.P.Morgan
Asset Management

Emerging market assets, while acknowledged as an important element of the investment universe, have lagged in their acceptance as separate asset classes in their own right.

Emerging markets (EM) have matured and offer a broad set of investable asset classes: not just equities, but also sovereign and corporate debt denominated in both local and foreign currencies (mostly in US dollars). Each of these assets is intrinsically different from the other, providing distinct exposures and diversification benefits (Exhibit 1). We consider as emerging markets not only the BRIC countries of Brazil, Russia, India and China but also the smaller markets of Central and South America, Europe, Africa, and Middle East/Asia that comprise the MSCI EM Index and the J.P. Morgan sovereign and corporate debt indices.

Exhibit 1: Comparison of emerging market equities and debt				
	Equities	Foreign currency denominated sovereign debt	Local currency debt	Foreign currency denominated corporate debt
Source of return	Dividend yield and higher equity prices	A spread product measured by yield above US Treasuries	(1) currency fluctuation; (2) duration risk	Spread over DM corporates
Currency risk*	Yes	Yes	Yes	Yes
Liquidity	Most liquid	High, but not as high as EM equities	Less liquid than foreign-currency denominated sovereign debt in the past but liquidity is fast improving	Least liquid
Investors	Dominated by international money flows and a rising local investor base in many markets	Locals dominant, foreign investors own less than 20%	Dominated by regional institutional investors	Local and international institutional investors
Average credit rating**	More than 90% of equity listed is investment grade	Investment grade***	BBB+	BBB
Most common index	MSCI EM	J.P. Morgan EMBI Global Diversified	J.P. Morgan GBI-EM Global Diversified	J.P. Morgan CEMBI Broad Diversified

*A GBP based portfolio is exposed to currency risk because these asset classes are predominately denominated in USD.

**Local currency debt is predominantly sovereign rather than corporate.

***Average rating across Moody's, Standard & Poor's and Fitch.

Source: J.P. Morgan Asset Management. Data as of 31 March 2011.

Arguments against EM cite higher risk and unreliable returns, and it is true that the historical volatility of EM equities and debt has been greater than that of developed market financial assets. Over the past decade, however, returns have largely compensated for the high volatility. This can be seen in the Sharpe ratio of EM equities and debt, which have, on average, been higher than those of corresponding developed market (DM) assets (Exhibit 2).

Yet many institutional investors have stayed significantly underweight emerging market assets:

- According to the 2010 Asset Allocation Survey conducted by the Council of Institutional Investors, US corporate, public and union funds have an average EM equity allocation of 3.6% and an allocation of 1.7% to global/international fixed income, a classification that includes EM debt¹.
- The target EM equity allocation was 2% for UK institutional investors².
- In Europe, excluding the UK, the target EM equity allocation for institutional investors was 4% as of June 2009³.

In contrast, the EM market capitalisation weight in the MSCI All Countries World Index was 13.7% as of March 2011. EM economies have contributed 47% of global GDP growth in 2010 (based on purchasing power parity), an increase from 30% in 1990, according to IMF data. The same report predicted that their contribution to global economic growth would surpass that of developed economies by 2013 (Exhibit 3). Throughout the global financial crisis, aggregate EM GDP growth rates were consistently higher than the aggregate developed markets (DM) GDP rates (Exhibit 4), averaging 5% more per quarter. Looking ahead into 2011 and 2012, both J.P. Morgan and IMF forecasts suggest that EM economies will lead the global recovery, with IMF forecasts for real year-over-year GDP growth in emerging and developing economies projected at 6.5%, as compared to 2.5% in advanced economies⁴. This is not to say that high real GDP growth alone is sufficient to generate high financial asset returns; despite relative EM economic strength through the entire financial crisis, stresses in developed markets constrained EM asset returns.

Exhibit 2: EM assets have exhibited higher Sharpe ratios over the past decade			
	Return	Volatility	Sharpe ratio*
Debt			
3-month libor	4.1%	0.5%	0.0
UK Aggregate Bonds	5.7%	6.1%	0.3
Global High Yield	9.3%	11.7%	0.4
EM Debt	12.2%	10.2%	0.8
Equities			
MSCI World	1.6%	17.1%	-0.2
MSCI EM	13.8%	23.6%	0.4

*The risk-free rate used in the calculation of the Sharpe ratio is 3 month libor.

Source: J.P. Morgan Asset Management, Bloomberg. Note: Data used are from 2000-2010, except for EM Local Debt and EM Corporate debt which range from 2002-2010.

In this paper, we consider the contribution of emerging market equities and debt to overall portfolio efficiency by addressing the following two questions:

- After EM financial markets recoupled with DM financial markets during the recent global financial crisis, how likely are they to decouple and provide opportunities for returns on investments?
- What is the impact on the risk/return profile of a portfolio that invests in emerging market equities and debt?

¹www.cii.org

²"European Equity Survey—How institutional investors are investing a year on from the credit crisis," J.P. Morgan Asset Management—Market Pulse, December 2009. The figure of 2% is likely to underestimate UK investors' exposure to EM as many schemes include their EM holdings in global equity portfolios.

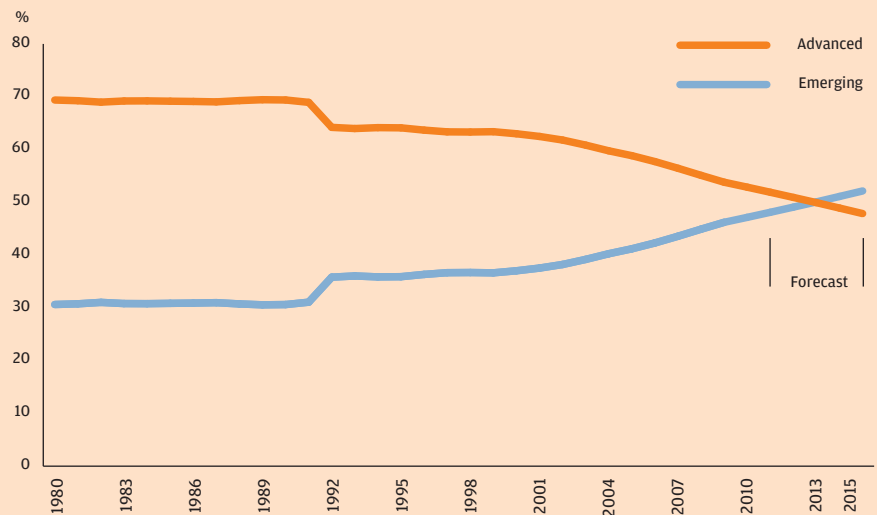
³"European Equity Survey—How institutional investors are investing a year on from the credit crisis," J.P. Morgan Asset Management—Market Pulse, December 2009.

⁴World Economic Outlook Update—An update of the key WEO projections, January 25, 2011 (www.imf.org).

The 'Emerging Markets' have emerged

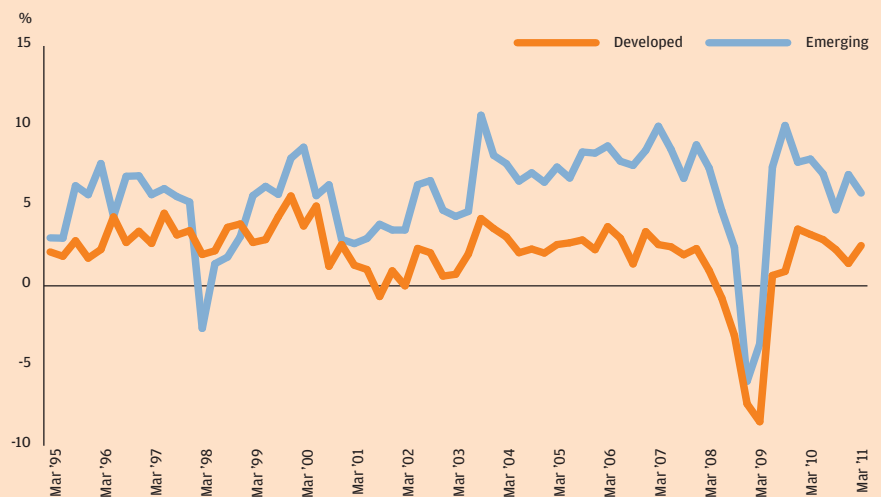
Not only have EM economies been the frontrunners in the global economic recovery, most economists forecast that EM growth will continue to outpace DM. The emerging economies account for more than 70% of the world's population with a rising middle class and a corresponding increase in income⁵. The government debt-to-GDP ratio has improved considerably for the aggregate EM economy as well as for several of the individual countries (Exhibit 5). This bodes well for continued economic growth.

Exhibit 3: Emerging markets' contribution to global GDP growth is forecast to surpass developed markets by 2013



Source: World Economic Outlook Database. Data as of October 2010.

Exhibit 4: Comparison of real GDP growth (quarter over quarter) in EM and DM economies



Source: J.P. Morgan Asset Management. Data as of April 2011.

⁵The example of China is particularly telling, where the number of those living below the poverty line has shrunk from 99 million in 2001 to fewer than 30 million in 2010. Source: OECD Economic Surveys: China 2010, Organisation for Economic Cooperation and Development, February 2010.

Exhibit 5, which compares EM and DM economies across other macro-economic dimensions, highlights the improved risk landscape in EM economies. Most EM economies are now running current account surpluses, with the value of exports exceeding that of imports. They are also stocked heavily with foreign exchange reserves due to a rise in commodity prices and large inflows of foreign direct investment. The reserves reduce the risks associated with a sudden reversal in capital inflows or unexpected currency fluctuations by providing a cushion against future crises similar to those of the 1990s and early 2000s.

Exhibit 5: Comparison of fiscal and external positions of emerging and developed economies

	Govt debt % of GDP		Fiscal deficit % of GDP		Total External debt % of GDP		FX Reserves % of GDP		Curr Acct balance % of GDP	
	2001	2010	2001	2010	2003	2010**	2001	2009	2001	2010
Emerging Markets	50.7%	36.9%	-2.8%	-3.7%	35.3%	24.7%	18.0%*	31.8%	0.7%	1.5%
Brazil	70.7%	66.8%	-3.3%	-1.7%	42.3%	15.5%	6.5%	15.2%	-4.2%	-2.6%
China	17.7%	19.1%	-2.8%	-2.9%	12.7%	8.5%	16.6%	49.2%	1.3%	4.7%
India	75.8%	71.8%	-9.5%	-9.2%	19.8%	17.7%	10.3%	21.7%	0.3%	-3.1%
Indonesia	80.2%	26.7%	-2.7%	-1.5%	56.8%	26.0%	17.5%	12.2%	4.3%	0.9%
Russia	47.6%	11.1%	3.2%	-4.8%	40.8%	26.7%	11.8%	35.7%	11.1%	4.7%
Turkey	77.6%	43.4%	-13.9%*	-3.5%	47.5%	34.8%	10.2%	12.2%	1.9%	-5.2%
Developed Markets	68.1%	95.9%	-1.4%	-8.0%	34.8%	61.7%	3.2%	4.3%	-0.9%	-0.3%
United Kingdom	37.7%	76.7%	0.6%	-10.2%	290.2%	397.6%	2.5%	3.1%	-2.1%	-2.2%
Euro Area	68.2%	84.1%	-1.8%	-6.5%	75.1%	124.2%	5.0%	4.7%	0.1%	0.2%
United States	54.7%	92.7%	-0.3%	-11.1%	62.3%	98.4%	1.3%	2.9%	-3.9%	-3.2%
Japan	151.7%	225.9%	-6.3%	-9.6%	32.0%	47.7%	9.8%	20.7%	2.1%	3.1%

*Data as of 2002, **Estimated.

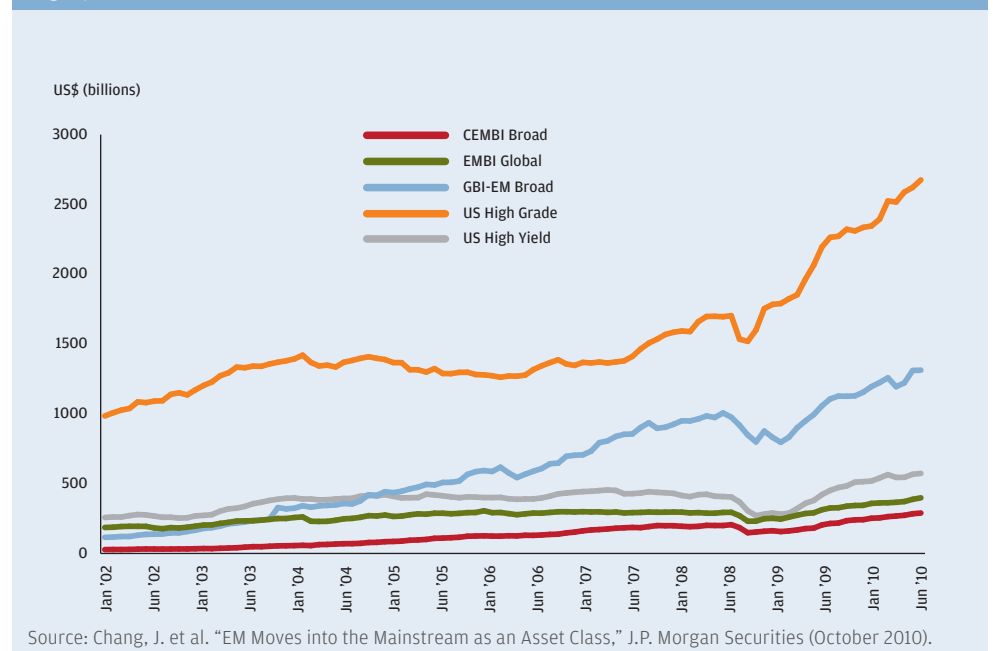
Source: IMF, CIA Factbook, The World Bank, ECB, World Economic Outlook Database, J.P. Morgan Asset Management.

Micro improvement

Set against this positive macro-economic backdrop, improving micro-conditions make the case for investing in EM assets even more compelling. As the burden of public sector debt has fallen significantly, the credit rating of all EM debt—sovereign, local, and corporate—has been steadily improving. The ratio of upgrades to downgrades in EM sovereign debt now stands at 6:1, and all three of J.P. Morgan’s Emerging Market Indices are now classified as investment grade. At the same time, the average rating for developed country sovereigns has declined⁶.

The improving credit outlook has benefited EM debt in two ways. First, it has enabled EM governments to borrow increasingly in their local currency. This cuts the risks associated with their inability to repay the interest and principal on their bonds since it gives them the option of repaying the debt by raising taxes denominated in the same currency. Second, it has deepened the market. The market size of investable EM debt assets has grown significantly so that today the market size of EM local debt exceeds that of US High Yield (Exhibit 6).

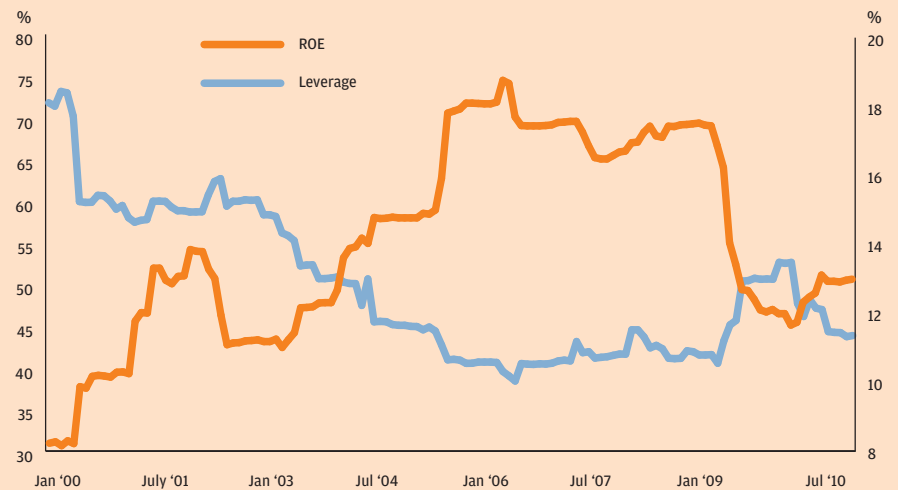
Exhibit 6: Total market capitalisation of EM debt is now over twice as large as high yield debt



⁶Chang, J. et al. "EM Moves into the Mainstream as an Asset Class," J.P. Morgan Securities (October 2010).

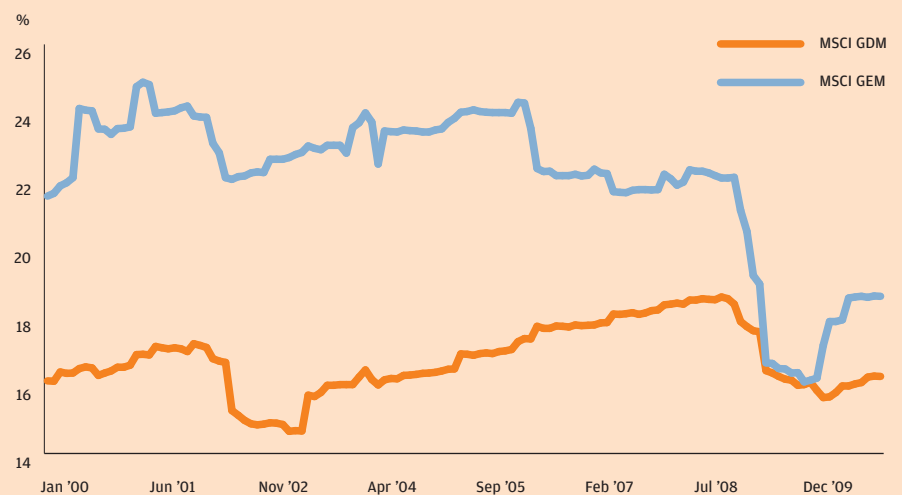
Return on equity (ROE) levels have fallen considerably since 2008, but over 2010 there has been a consistent increase in ROE with a simultaneous decline in leverage, a sign of the strong health of EM corporate balance sheets and a positive for potential corporate growth (Exhibit 7). In addition, operating profitability of EM companies in 2010 also recovered, as shown in Exhibit 8, with EM companies reporting higher operating profitability levels than DM companies.

Exhibit 7: Emerging market corporate balance sheets are back on the path to recovery



Source: J. P. Morgan Asset Management (USD aggregations from corporate reports). Data as of December 2010.

Exhibit 8: Operating profitability of EM companies has picked up and is higher than that of DM companies



Source: J. P. Morgan Asset Management (USD aggregations from corporate reports). Data as of December 2010.

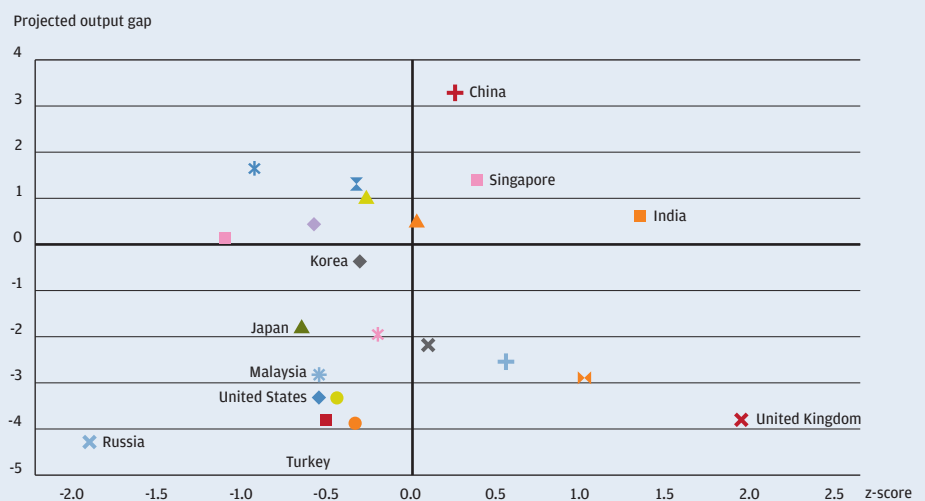
Return drivers, risk factors

We believe that favourable changes in emerging markets, particularly the larger ones, support an argument for diversification. As EMs lay claim to a steadily larger proportion of global GDP, fundamental shifts in inflation, tighter monetary policy and a rise in demand for commodities translate into exposure to different sources of risk and return. At the same time, the developed world faces weakening demand and rising unemployment, which raises the prospect of a continued fiscal stimulus, at least in the medium term.

There are factors that could slow EM growth. The main risk is intensified inflationary pressure and the future policy response associated with such a threat. However, political unrest and intervention is another significant source of risk typically afflicting EM countries. Moreover, although EM currencies have appreciated over the recent years, a sudden reversal in that trend could result in lower returns on EM equities and local currency-denominated sovereign debt⁷. Investing in a typical ETF based on market-cap weighted indices also contributes to regional risks. The MSCI EM Index based on market capitalisation weights, for example, is more skewed towards Asia than any other region.

That said, individual emerging economies have reached different points on the economic recovery cycle since the global financial crisis. The differences arise in terms of external leverage, inflationary pressures, dependence on DM economies and reliance on commodities (either as net exporters or net importers), among other reasons. This presents investors with a wide dispersion in potential returns where certain EM countries appear more attractive now as compared to others. Exhibit 9 highlights this point by comparing the projected output gap in fourth quarter 2010 versus the z-score for current inflation relative to the historical averages in each country.

Exhibit 9: Value across EM countries is diverse



Source: J.P. Morgan Asset Management. For illustrative purposes only. Data as of fourth quarter 2010.

Analysing countries on even this simple two-variable grid emphasises the heterogeneity across EM countries, where countries in the lower left quadrant look the most attractive. Note, however, this is a very simplistic approach that only focuses on two macro-variables to determine value across EM countries. To find relative value across EM assets in both equities and debt, one would need to compare the countries across many dimensions, suggesting that actively managing EM assets might be a better approach than passive investing via indices.

⁷See for example: "China: an update on the market and government policy", J.P. Morgan Asset Management

The decoupling factor

The theory of decoupling suggests that the emerging markets have matured to the point where they now behave independently from developed markets. This theory suggests, therefore, that an investor who holds assets from both the developed and the emerging markets can diversify away their portfolio's risk. During the 2008 financial crisis, however, when losses in EM equities far overshoot losses in world equities, investors lost faith in the validity of the decoupling theory as EM assets recoupled – or reformed their links with – their DM equivalents. We argue through quantitative analysis that investors who held that view misinterpreted the phenomenon. Decoupling is not a question of either/or but a question of when.

Unconditional decoupling is extremely difficult to observe between regions, especially during times of financial stress in the current deeply interconnected global economy. Nevertheless, there is evidence of EM and DM economic decoupling since even during the worst of the financial crisis EM GDP growth was consistently higher than DM growth, averaging 5% more from mid-2007 to mid-2009.

Economic decoupling at the GDP level did not necessarily translate into decoupling at the financial asset level, however. In the early days of the financial crisis, EM equities appeared to be somewhat impervious to movements in developed equity markets. As the crisis deepened, EM equities succumbed, incurring losses far greater than DM equities. Exhibit 10 shows how the time series correlation between EM and DM equities has risen and fallen across the market cycle, paralleling the correlation among intra-DM region equities (US versus Europe). Both intra-DM and inter-DM/EM region correlations rose at times of extreme market events, for instance during the recent financial crisis. While correlations between asset class returns generally tend to rise in period of severe market stress⁸, intra-DM correlations have been consistently higher than inter-DM/EM correlations, thus illustrating a marginal benefit in diversifying across equity markets.

Exhibit 10: Inter-DM/EM versus intra-DM regional (US and Europe) rolling 3-year correlation in equity markets



⁸Sheikh, Abdullah and Hongtao Qiao. "The Non-Normality of Market Returns," J.P. Morgan Asset Management (2009).

Decoupling dominates

While correlation analysis is useful in discerning short term trends, it can disguise underlying long term linkages that could exist, dissipate or vary between time series. An econometric measure of co-movement called cointegration⁹ analysis not only reveals what correlation sometimes hides, it also gauges the strength of the relationship that two or more series may share over time. This method examines whether two variables (for which historical values are known) share a long-run, stable relationship. The difference between correlation and cointegration is further explained in the box below.

Correlation vs cointegration

Cointegration should not be confused with correlation. Perhaps an easy way of understanding the difference is to imagine a boy and a dog walking in a park. At each step, the boy and the dog each decide independently to walk in a direction at random. If their decisions are highly correlated, you would expect them to be walking in the same direction most of the time.

Cointegration, in contrast, pertains to long term trends. Imagine this time that the boy is holding the dog on a long leash. The boy and the dog are deciding which direction to walk in independently from each other, and at random, so that knowledge of where the boy is at any point in time gives no information as to the whereabouts of the dog. In the long run, however, we know that the boy and the dog cannot be further apart than the length of the leash. This leash represents the cointegrating relationship, or long term trend, between the two.

In the context of our analysis, the boy and the dog each represent one time series. If two series are highly correlated, you would expect that when one rises or falls in value, so does the other most of the time. In contrast, two cointegrated series may or may not rise or fall together. They will, however, exhibit a long term relationship to one another.

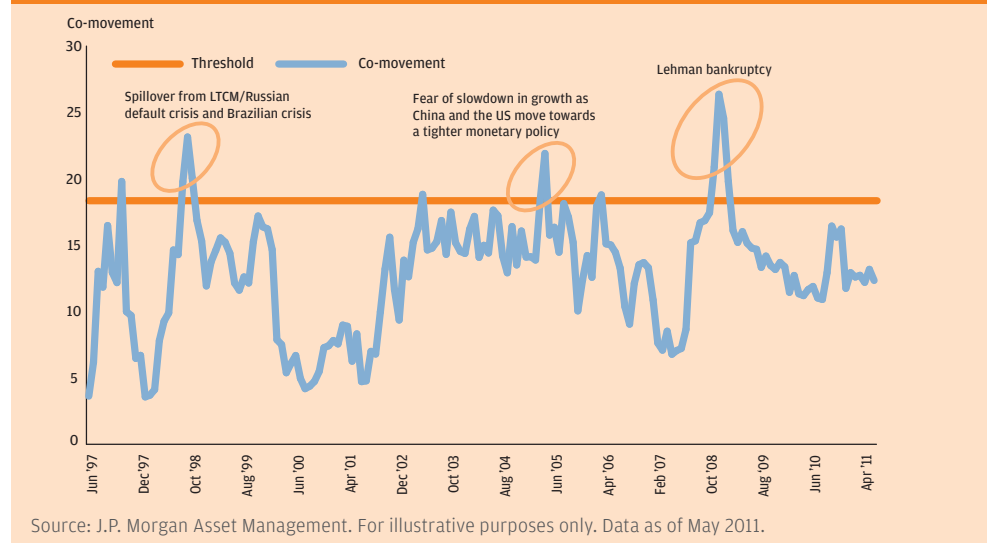
Observing cointegration over a lengthier time frame can serve as an informal test of the decoupling/recoupling hypothesis. Our approach in this section is to test the hypothesis that a statistically significant relationship does, in fact, exist between two given data sets. Beyond that, we also test whether this relationship changes significantly over time.

In Exhibit 11, we show the statistical measure which captures the strength of the long term co-movement between EM and world equity prices on a rolling five-year basis. The horizontal dashed line represents the statistical threshold¹⁰ below which we conclude that there is no significant long term co-movement. Values above this threshold indicate recoupling between equity markets. As is true in shorter term measures, we find a greater price linkage between EM and DM financial markets in periods of extreme market events and relatively low price movements between these markets during other times.

⁹Engle, Robert F., Granger, Clive W.J. (1987) "Cointegration and error correction: Representation, estimation and testing," *Econometrica*, 55(2), 251-276.

¹⁰The threshold is defined at the 5% level by the trace test. For a detailed treatment of this methodology, please refer to Engle, Robert F., Granger, Clive W.J. (1987) "Cointegration and error correction: Representation, estimation and testing," *Econometrica*, 55(2), 251-276.

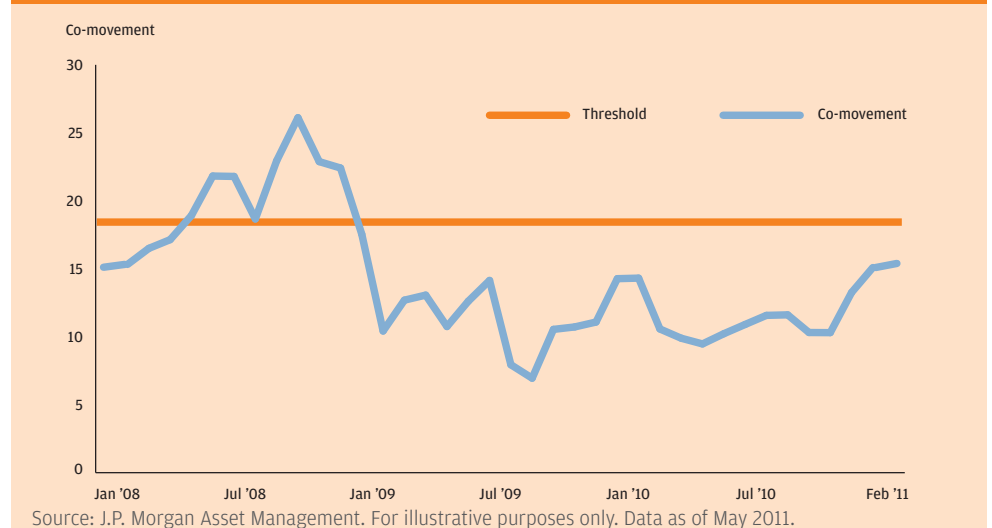
Exhibit 11: Recoupling between world and EM equities during extreme market downturns



Our analysis appears to corroborate the recoupling argument between EM and world equity markets during extreme market events. We find the co-movement trend line moving above the statistical threshold line during the 2008 financial crisis as well as in the aftermath of the Russian default crisis of 1998. Barring extreme market distortions, however, there is little evidence of consistent longer term price co-movement between world and EM equity markets. In other words, there is evidence of longer term decoupling of EM and DM equity markets, especially during “normal” economic cycles.

The co-movement between prices in EM and DM credit markets conveys a similar story. Under extreme market distortions, credit markets tend to recouple. The co-movement between EM local debt markets and world corporate credit markets increased throughout the financial crisis in 2008, reaching a peak after the collapse of Lehman Brothers in September 2008 (Exhibit 12). Since early 2009, though, the co-movement has declined and fallen below the threshold line, indicating decoupling between EM and DM credit markets.

Exhibit 12: Evidence of low long term co-movement between world corporate credit and emerging market debt

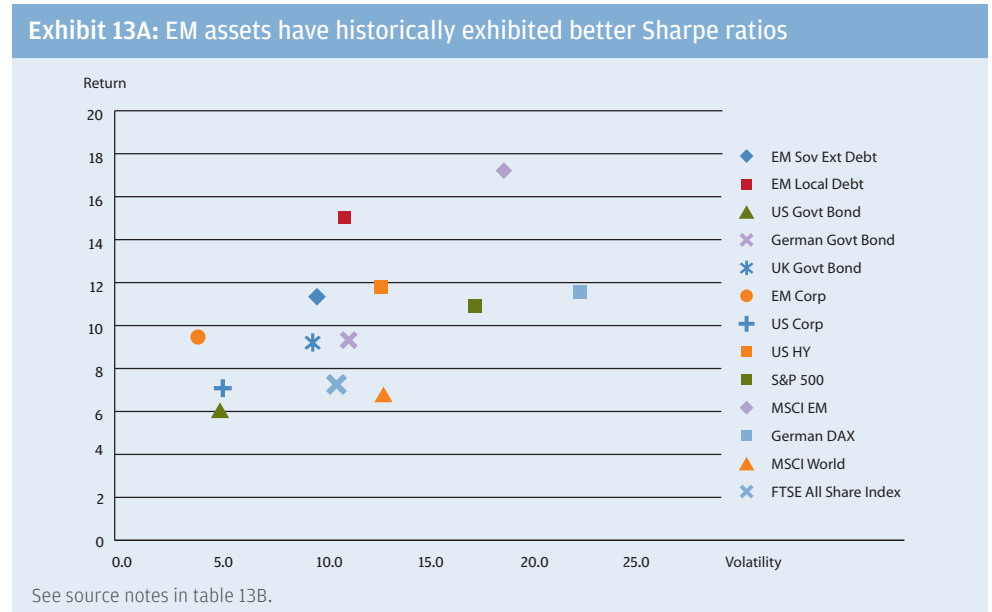


In summary, it appears that both debt and equity markets have stabilised in terms of their alignment with their developed counterparts, and have re-entered the decoupling phase. There is no evidence to suggest that EM and DM markets will recouple in the near future. However, should there be an unanticipated and significant event, this situation may change.

EM assets should offer portfolio diversification benefits because economic drivers for EM and DM are likely diverging, as outlined above. With better growth prospects in EM economies and improving micro-economic conditions, investors should allocate specific weights to EM assets in their portfolios.

Risk/return characteristics of a portfolio with an allocation to emerging markets

In Exhibit 13A we plot the average annualised total return of various developed and emerging market assets versus their average annualised volatility over the past 20 years. While EM equities have data going back that far, we are constrained by the amount of data available for EM debt markets. Hence, the chart only shows the return/risk profile for debt instruments going back between eight and 15 years. We find emerging market assets have very high Sharpe ratios, with some of the EM assets clearly outperforming their counterparts in developed markets. For example, EM equities have provided better risk-adjusted returns as compared to the MSCI World Index.



A historical analysis, however, is not in itself a sufficient gauge of future performance. In an effort to adopt a forward-looking analysis, we draw on J.P. Morgan Asset Management's long term capital market assumptions to determine the potential impact of a strategic investment in emerging markets on a long-term portfolio.

In this respect, most portfolio asset allocation models are based on the assumption of normality of asset returns. However, asset returns are most often not normally distributed and exhibit various sources of non-normality¹¹ such as:

- **Serial correlation:** Returns in different periods are not independent and identically distributed.
- **Fat left tails:** Negative returns in greater magnitude and greater frequency than what is assumed under a normal distribution.
- **Correlation breakdown:** Correlations between asset classes are not constant but tend to converge under extreme events.

In fact, based on statistical techniques we find that both emerging markets debt and equity returns exhibit significant non-normal behavior such as serial correlation and fat left tails. As shown in Exhibit 13B, the presence of serial correlation in EM asset returns tends to underestimate volatility (standard deviation) of returns, since after correcting for serial correlation using a statistical smoothing method, volatility of returns is actually calculated to be higher than prior to the application of the correction method.

Exhibit 13B: Serial correlation tends to reduce volatility of EM assets

Asset class	Evidence of serial correlation?	Standard deviation before "unsmoothing"?	Standard deviation after "unsmoothing"?	Underestimation of volatility	Evidence of fat left tails?
Emerging Markets Debt	Yes*	11.53%	13.11%	12%	Yes
Emerging Markets Equity	Yes*	24.81%	30.34%	18%	Yes

Source: J.P. Morgan Asset Management, Bloomberg. Note: Return and volatility for equities is calculated over 1991-2010 for EM sovereign external debt and US/German/UK government bonds it is calculated over 1994-2010. For EM local corporate debt we calculate it over 2002-2010, and for US corporate and high-yield debt we calculate it over 2000-2010. Annualised volatility is calculated as the standard deviation of daily returns over an entire year.

*EM equity and EM debt both display strong serial correlation when they are expressed in USD. If the returns for these two asset classes are converted to GBP, the high volatility of the exchange rate tends to mask this serial correlation.

¹¹Sheikh, Abdullah and Hongtao Qiao. "The Non-Normality of Market Returns," J.P. Morgan Asset Management (2009).

The value added

In this section, we employ the Non-Normal Market Return Model¹² developed by J.P. Morgan Asset Management to analyse portfolio returns, particularly downside risk. Rather than using standard deviation, which assumes a normal distribution of results and does not measure the potential severity of negative outcomes, we consider conditional value at risk at the 95% level of confidence (CVaR95) to be a more fitting risk measure. It focuses on negative outcomes and captures fat left tail events. We define CVaR95 as the average loss in a portfolio in the worst five percent of scenarios based on our forward-looking computer-run simulations. This measure differs from standard deviation, which calculates risk based on historical observations of volatility and assumes a normal distribution of returns.

Exhibit 14A summarises the main results of our analysis based on an initial investment of £1bn. In the first column, labelled 'current', we show the risk and return characteristics of a typical portfolio for a traditional UK defined benefit scheme, with a 30% allocation to fixed income, 65% to equities and 5% to real estate. The return and risk figures for this portfolio are shown in the last rows beneath the allocation.

The following columns show what happens when EM equity (EME) and EM debt (EMD) are included in the portfolio. Column 2 shows that when 5% of the portfolio is taken from UK equities and allocated to EME, the portfolio's expected return rises by 1.9% while the potential loss rises also by 1.7%. The return per unit of risk¹³, however, improves from 0.159 to 0.161. Similarly, as the allocation to EME increases to 10%, the portfolio's return per unit of risk rises to 0.162.

Columns 3 and 4 show the impact of a 5% and 10% allocation to EMD, taken from UK gilts and UK corporate bonds. In both cases the portfolio's expected return rises by 1.9% and 4.4% respectively, while the potential loss falls by 1.1% and remains stable, thereby improving the portfolio's efficiency.

In all four cases, therefore, the inclusion of emerging markets - whether equities or bonds - tends to increase portfolio efficiency.

Exhibit 14A: Impact of EME and EMD on a portfolio's risk and return profile					
	1	2	3	4	5
Asset Allocation	Current	5% EME	10% EME	5% EMD	10% EMD
UK Cash	2.0%	2.0%	2.0%	2.0%	2.0%
UK Gilts	13.0%	13.0%	13.0%	13.0%	8.0%
World Government Bonds (hedged)	5.0%	5.0%	5.0%	5.0%	5.0%
Emerging Markets Debt	0.0%	0.0%	0.0%	5.0%	10.0%
UK Agg Corporate	10.0%	10.0%	10.0%	5.0%	5.0%
Fixed Income	30.0%	30.0%	30.0%	30.0%	30.0%
UK Equity	30.0%	25.0%	20.0%	30.0%	30.0%
AC World ex-UK Equity	35.0%	35.0%	35.0%	35.0%	35.0%
Emerging Markets Equity	0.0%	5.0%	10.0%	0.0%	0.0%
Equity	65.0%	65.0%	65.0%	65.0%	65.0%
UK direct real estate	5.0%	5.0%	5.0%	5.0%	5.0%
Alternatives	5.0%	5.0%	5.0%	5.0%	5.0%
Total Portfolio	100.0%	100.0%	100.0%	100.0%	100.0%

Expected Arithmetic Return	7.6%	7.7%	7.8%	7.7%	7.9%
(improvement)	NA	1.9%	3.7%	1.9%	4.4%
Expected Volatility	10.6%	10.9%	11.2%	10.8%	11.1%
(improvement)	NA	2.8%	6.0%	2.2%	5.3%
CVaR95 in non-normal framework	£286	£291	£298	£283	£286
% change in CVAR95	NA	1.7%	4.1%	-1.1%	0.0%
Return per Unit of CVaR	0.159	0.161	0.162	0.166	0.171
CVaR95 in mean variance framework	£238	£244	£252	£238	£242

Source: J.P. Morgan Asset Management. For illustrative purposes only. Data based on 10 years to October 2010.

¹²Sheikh, Abdullah and Hongtao Qiao. "The Non-Normality of Market Returns," J.P. Morgan Asset Management (2009).

Exhibit 14B shows the sensitivity of these results to our return assumptions. The first four comparisons (2-5) show the impact of increasing our return assumptions for EME and EMD by 1% while leaving the volatility assumptions unchanged. Unsurprisingly, the return per unit of risk improves noticeably.

The last four columns (6-9) illustrate the impact of lowering our return assumptions by 1%. In this case it is interesting to observe that while a 5% or 10% allocation to EME does not significantly alter the return per unit of potential loss relative to the starting portfolio, a 10% allocation to EMD still increases the portfolio's efficiency, although to a much lesser extent: the return per unit of potential loss relative to the starting portfolio is now only 0.162.

Exhibit 14B: Sensitivity of portfolio risk-adjusted returns to 1 percentage point changes in the return assumptions for EME and EMD									
		Return assumptions are 1% higher				Return assumptions are 1% lower			
	1	2	3	4	5	6	7	8	9
Asset Allocation	Current	5% EME	10% EME	5% EMD	10% EMD	5% EME	10% EME	5% EMD	10% EMD
UK Cash	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
UK Gilts	13.0%	13.0%	13.0%	13.0%	8.0%	13.0%	13.0%	13.0%	8.0%
World Government Bonds (hedged)	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Emerging Markets Debt	0.0%	0.0%	0.0%	5.0%	10.0%	0.0%	0.0%	5.0%	10.0%
UK Agg Corporate	10.0%	10.0%	10.0%	5.0%	5.0%	10.0%	10.0%	5.0%	5.0%
Fixed Income	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
UK Equity	30.0%	25.0%	20.0%	30.0%	30.0%	25.0%	20.0%	30.0%	30.0%
AC World ex-UK Equity	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%
Emerging Markets Equity	0.0%	5.0%	10.0%	0.0%	0.0%	5.0%	10.0%	0.0%	0.0%
Equity	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
UK direct real estate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Alternatives	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Total Portfolio	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Expected Arithmetic Return	7.6%	7.7%	7.9%	7.7%	8.0%	7.6%	7.7%	7.6%	7.8%
(improvement)	NA	2.5%	5.0%	2.5%	5.7%	1.2%	2.4%	1.2%	3.0%
Expected Volatility	10.6%	10.9%	11.2%	10.8%	11.1%	10.9%	11.2%	10.8%	11.1%
(improvement)	NA	2.8%	6.0%	2.2%	5.3%	2.8%	6.0%	2.2%	5.3%
CVaR95 in non-normal framework	£286	£288	£293	£278	£276	£293	£302	£287	£295
% change in CVaR95	NA	0.8%	2.5%	-2.9%	-3.4%	2.5%	5.6%	0.5%	3.1%
Return per Unit of CVaR	0.159	0.164	0.168	0.171	0.180	0.158	0.157	0.162	0.162
CVaR95 in mean variance framework	£238	£244	£252	£238	£242	£244	£252	£238	£242

Source: J.P. Morgan Asset Management. For illustrative purposes only. Data based on 10 years to October 2010.

¹³The return per unit of risk is the arithmetic return less the interest rate, divided by the CVaR95.

Varying the EM mix

In Exhibit 15 we extend the analysis and invest in both EME and EMD in varying proportions. Our analysis illustrates that the simultaneous allocation to EME and EMD does indeed increase the return per unit of risk. A summary of our findings is reported in Exhibit 15 – the largest improvement to the return per unit of risk in this hypothetical setup is in the case of a 10% allocation to both EME and EMD.

Beyond an allocation of 20% to EME and EMD, however, any further increase can start to diminish the improvement in the return per unit of risk – such a large allocation is in any case not generally realistic. The diminishing value of EME and EMD allocations beyond a certain threshold would depend on the initial portfolio allocation and return assumptions. In a model based on USD, the threshold beyond which the return per unit of risk begins to deteriorate is at a 15% allocation to EME and EMD (see USD version of this paper). This result is not unique to asset classes characterised as emerging markets, but is rather a function of both observable and unobservable attributes of asset classes including cross-sectional and time diversification properties, co-movement and the inherent dynamics embedded in asset classes to cultivate returns.

Thus simulations using the J.P. Morgan Asset Management Non-normal Model indicate that the return per unit of risk of a portfolio can potentially increase when we include EME and EMD in a portfolio—with caveats:

- The improvement in the return per unit of risk is sensitive to the return assumptions used in the model.
- The change in the return per unit of risk is sensitive to which assets EME and EMD are replacing.
- The increase in the return per unit of risk starts to diminish beyond a certain allocation to EME and EMD, a result not unique to EM assets.

Exhibit 15: Inclusion of EME and EMD improves return per unit of risk (CVar95)

Asset Allocation	Current	5% and 5%	10% and 10%	10% and 5%
UK Cash	2.0%	2.0%	2.0%	2.0%
UK Gilts	13.0%	13.0%	8.0%	13.0%
World Government Bonds (hed)	5.0%	5.0%	5.0%	5.0%
Emerging Markets Debt	0.0%	5.0%	10.0%	5.0%
UK Agg Corporate	10.0%	5.0%	5.0%	5.0%
Fixed Income	30.0%	30.0%	30.0%	30.0%
UK Equity	30.0%	25.0%	20.0%	20.0%
AC World ex-UK Equity	35.0%	35.0%	35.0%	35.0%
Emerging Markets Equity	0.0%	5.0%	10.0%	10.0%
Equity	65.0%	65.0%	65.0%	65.0%
UK direct real estate	5.0%	5.0%	5.0%	5.0%
Alternatives	5.0%	5.0%	5.0%	5.0%
Total Portfolio	100.0%	100.0%	100.0%	100.0%

Expected Arithmetic Return	7.6%	7.8%	8.2%	8.0%
(improvement)	NA	3.7%	8.1%	5.6%
Expected Volatility	10.6%	11.1%	11.8%	11.5%
(improvement)	NA	5.1%	11.5%	8.3%
CVar95 in non-normal framework	£286	£288	£299	£295
% change in CVar95	NA	0.8%	4.5%	3.4%
Return per Unit of CVar	0.159	0.168	0.173	0.168
CVar95 in mean variance framework	£238	£245	£257	£253

Source: J.P. Morgan Asset Management. For illustrative purposes only. Data based on 10 years to October 2010.

Conclusion

Our analysis demonstrates the value in having a defined core allocation to emerging market assets. Our research suggests that an allocation to EME and EMD as part of a multi-asset portfolio has the potential to bolster portfolio returns as well as to provide diversification benefits over the long term.

We show that the recoupling between emerging and developed markets which prevailed in the aftermath of the 2008 financial crisis is not necessarily likely to be maintained. Indeed, we show that these markets have already started to decouple as they have stabilised, and we expect them to remain decoupled for the medium term, affording investors the opportunity to reap the benefits of higher expected emerging market GDP growth and improving micro-economic conditions. We also show that investing in EME and EMD can potentially boost risk-adjusted returns, offering some protection against downside risk and rendering portfolios more efficient over the long term.

The optimal strategic allocation to emerging markets must depend on many more factors than can be accounted for in any single model, and this optimal allocation will be a function of each investor's long term objectives. Overall, however, we find that there is an important place for both EME and EMD in a well diversified long term portfolio.

EME and EMD tend to perform differently from one another at different times, therefore the optimal combination of EME and EMD to hold in a portfolio at any given stage in the business cycle will vary.



Annapurna Valluri
Strategic Advisor
Strategy Group



Alexandre Christie
Strategic Advisor
Strategy Group



Paul Sweeting
European Head
Strategy Group

J.P. Morgan Asset Management
Finsbury Dials
20 Finsbury Street
London EC2Y 9AQ
jpmorganassetmanagement.co.uk/institutional

Important Information

Please be aware that this material is produced for information purposes only and should not be taken as or construed as a recommendation or advice. The opinions and views expressed here are those held by J.P. Morgan Asset Management at the time of publication, which are subject to change. It has been prepared for use by J.P. Morgan Asset Management for distribution to informed staff from financial institutions. It includes opinions based upon our understanding of complex regulatory proposals that may well change or not be implemented at all. It is not intended to be and should not be construed as providing investment advice or advice on regulatory requirements or the law. Readers should take appropriate independent professional advice on such matters which is relevant to their particular situation before acting on anything contained in this report. JPMorgan Asset Management Marketing Limited accepts no legal responsibility or liability for any matter or opinion expressed in this material. This document may not be reproduced or distributed in any jurisdiction without the express prior written consent of J.P. Morgan Asset Management.

Issued in the UK by JPMorgan Asset Management Marketing Limited which is authorised and regulated in the UK by the Financial Services Authority. Registered in England No: 288553. Registered Office: 125 London Wall, London EC2Y 5AJ.

LV-JPM19374 AP19573

07/11