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# Emerging and Developed Markets: So the Last Shall Be First?

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*Some commentators have declared the demise of emerging markets (EM) as an asset class. Globalization has reversed, they contend, noting that over the past five years EM asset returns have been subpar relative to those in developed markets (DM). Indeed, growth in emerging markets has slowed since the global financial crisis, while DM economies and markets have benefited from unconventional monetary policies. Yet facts on the ground and careful analysis argue against the narrative of DM dominance. Over the secular horizon, we believe there is a strong structural case for EM assets.*

This paper compares the merits of EM and DM assets in global portfolios.

We begin with a broad analysis of beta and alpha opportunities in both emerging and developed markets. We focus on ex ante measures of risk premia and relative value to estimate beta and alpha. The paper assesses whether greater macroeconomic risks in emerging markets explain higher estimates of returns for emerging economies than for developed economies.

Using a risk taxonomy associated with EM crises, we consider the current balance of risks in emerging markets compared with their DM counterparts.

Our conclusions are threefold:

- 1) Using standard metrics, estimated returns in emerging markets compare favorably in equity, currencies and fixed income.
- 2) Despite a rich catalog of crises that have boosted EM risk premia, crisis risk has risen substantially in developed markets, suggesting that DM risk premia have room to adjust higher.
- 3) Investors are generally underallocated to EM equity and fixed income.

There's little doubt, of course, that EM countries will face episodic crises. However, with regard to valuation, liquidity and systemic risk, we believe there is a strong structural case for EM assets. Quite possibly, the last shall be first.

### 1. OVER THE PAST 20 YEARS, EMERGING MARKETS HAVE OUTPERFORMED DEVELOPED MARKETS ON A RISK-ADJUSTED BASIS, AT THE COST OF A NEGATIVE SKEW.

We compare the performance of DM and EM benchmarks in equities, currencies and fixed income. Because the history of EM prices is shorter, our data start with the inception dates for EM benchmarks (see Exhibit 1). Performance is broadly higher in emerging markets than in developed economies, as evidenced by their Sharpe ratios. However, the EM index is more negatively skewed, as shown by drawdown numbers.

Emerging economies outperformed developed markets across all three asset classes, substantially in currencies and equity but less so in fixed income. That said, the maximum drawdown in DM fixed income was significantly less than in emerging markets, as flight-to-quality considerations seemed to play a bigger role in fixed income than in currency markets throughout our sample.

#### Exhibit 1: EM equities, currencies and fixed income Sharpe ratios have outperformed

Metric	Equities		Currencies		Fixed income	
	DM index	EM index	DM index	EM index	DM index	EM index
Sharpe ratio	0.35	0.46	-0.02	0.88	1.39	1.63
Volatility	13.4%	16.3%	7.7%	6.0%	2.7%	2.6%
Max drawdown	-50%	-52%	-40%	-23%	-5%	-8%
Max drawdown/volatility	-3.8	-3.2	-5.2	-3.8	-1.8	-3.2

Source: Bloomberg and PIMCO. For equities, indices are 100% hedged MSCI World and 100% hedged MSCI Emerging Markets. Data cover period from 31 December 2001 to 31 December 2018. For currencies, indices are the inverted U.S. dollar index and JP Morgan EIMI Plus. Data cover period from 31 December 1993 to 31 December 2018. Fixed income indices are the JPM GBI Broad (FX Hedged) and JPM GBI-EM Global Diversified (FX Hedged). Data cover period from 31 December 2002 to 31 December 2018.

### 2. USING STANDARD METRICS, ESTIMATES OF EM RETURNS COMPARE FAVORABLY IN EQUITIES, CURRENCIES AND FIXED INCOME.

Next, we provide a snapshot of current estimated returns for equities, currencies and fixed income in emerging and developed markets – what we will call available beta. In our broad overview, we use relatively unsophisticated but broadly accepted measures. Specifically, these are:

- Earnings yields in equities
- Purchasing power parity (PPP) in currencies
- Real yields in local fixed income
- Credit default swap (CDS) default-adjusted spreads in external credit

To maintain consistency, we conduct the analysis among the same set of developed and emerging market countries from 2003 onward (see Appendix 1 for the equity ticker symbols).

#### Equities

Exhibit 2 compares the earnings yield in developed versus emerging markets. Our rationale is that the earnings yield is equal to the real equity yield under some conditions, using the Gordon growth model framework (see Appendix 2).

The market-weighted average real yield is about 2.4 percentage points higher in emerging stock markets than in their developed counterparts. If an investor focuses on the top three countries, emerging markets outperform developed markets by about 6.3 percentage points because of both the higher mean and the higher dispersion of earnings yields within emerging economies.

#### Exhibit 2: Earning yields: developed versus emerging markets

Country	Earnings yield	
	DM	EM
Market-weighted average	6.1%	8.5%
Top three equally weighted average	9.2%	15.5%
Bottom three equally weighted average	4.3%	4.4%

Source: Bloomberg and PIMCO as of 8 January 2019. See Appendix 3 for details of country-level calculations. As discussed below, part of the earnings yield differential can be traced to the real bond yield differential.

## Currencies

To compare currency valuations, it is simplest to use deviations from purchasing power parity. One can then calculate return estimates as real carry plus mean reversion to PPP, where the speed of mean reversion is inferred from an econometric model (using the Ornstein-Uhlenbeck process). Exhibit 3 shows Sharpe ratios – or estimated returns divided by volatility.

### Exhibit 3: Currency valuations: developed versus emerging markets

Country	PPP		Ex ante Sharpe	
	DM	EM	DM	EM
Equally weighted average	-9.8%	-5.6%	0.07	0.25
Top three equally weighted average	-24.4%	-26.8%	0.39	0.79
Bottom three equally weighted average	5.1%	9.2%	-0.22	0.37

Source: Bloomberg and PIMCO as of 8 January 2019. See Appendix 3 for details of country-level calculations.

Hypothetical example for illustrative purposes only.

Two conclusions stand out:

First, on the basis of PPP, it appears that DM and EM currencies are close to fair value against the U.S. dollar, on average, with average Sharpe ratio estimates near zero. But when comparing DM with EM currencies using PPP, it is advisable to consider productivity growth as an additional explanatory variable – i.e., the Balassa-Samuelson effect (see Appendix 4). Viewed in this context, EM currencies are favored and it can be assumed that EM currencies are likely cheaper than DM currencies.

Second, as with equities, we observe a higher dispersion in value in emerging markets compared with developed markets. Holding the top three Sharpe ratio EM currencies or selling the bottom three Sharpe ratio EM currencies both produce higher ex ante Sharpe ratios than equivalent strategies in DM currencies.

## Local rates markets

In fixed income markets, EM real yields appear to be 145 basis points (bps) higher than in developed markets, on average (see Exhibit 4). Why so?

First, quantitative easing pushed DM real yields lower by absorbing substantial proportions of bonds outstanding. Second, to the extent real yields are proportional to growth (see Appendix 5), higher EM growth rates – caused by more favorable demographics and convergence of productivity and capital stocks – help explain higher real yields.

As in currency markets, if one considers the three highest-yielding bond markets, emerging economies look even more attractive relative to developed economies. The EM average real yield is 352 bps higher than the DM average real yield.

### Exhibit 4: 10-year real yields: developed versus emerging markets

Country	10-year real yield	
	DM	EM
Equally weighted average	-0.1%	1.4%
Top three equally weighted average	1.0%	4.5%
Bottom three equally weighted average	-1.0%	-1.4%

Source: Bloomberg and PIMCO as of 8 January 2019. The real yield is defined as the 10-year nominal yield minus current local inflation. See Appendix 3 for details of country-level calculations.

## External credit markets

To explore the external credit landscape, we focus on the five-year default-adjusted CDS spread for the same countries. We define the default-adjusted CDS spread as the premium after adjusting for default, conditional on Moody's rating. Here again, EM countries have a higher premium: The spread is 45 bps higher, on average (see Exhibit 5).

**Exhibit 5: Five-year default-adjusted CDS spreads: developed versus emerging markets**

Country	5-year CDS spread	
	DM	EM
Equally weighted average	35	80
Top three equally weighted average	130	197
Bottom three equally weighted average	9	27

Source: IHS Markit and PIMCO as of 8 January 2019. See Appendix 3 for details of country-level calculations.

**3. AVAILABLE BETA (MACRO RISK PREMIA) HAS HISTORICALLY BEEN HIGHER IN EMERGING MARKETS THAN IN DEVELOPED ECONOMIES.**

After showing a snapshot of estimated returns, we now describe their time series. To contrast emerging and developed markets, we compare equally weighted averages across countries.

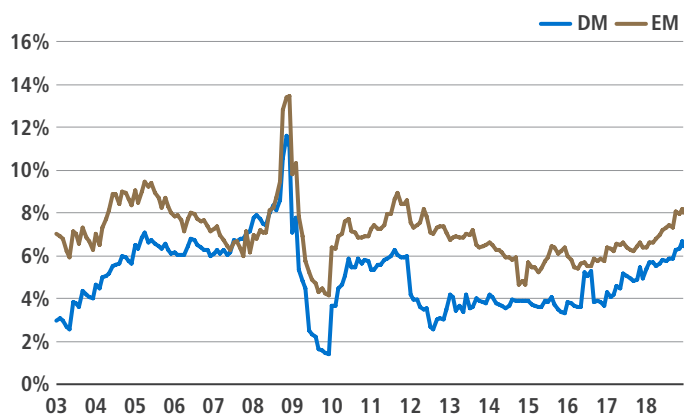
As in the prior section, we conduct the analysis among the same set of DM and EM countries from 2003 onward (see Appendix 1 for the equity ticker symbols).

**Equities**

As noted above, earnings yields, our proxy for real equity yields, are higher in emerging markets than in developed markets. How did real yields compare during the past 15 years?

The gap between real equity yields in developed and emerging markets narrowed to 155 bps in January 2019 from 407 bps in 2003 (see Exhibit 6). Note that the EM-DM gap is now higher for equally weighted than for market-weighted averages.

**Exhibit 6: Earnings real yield**

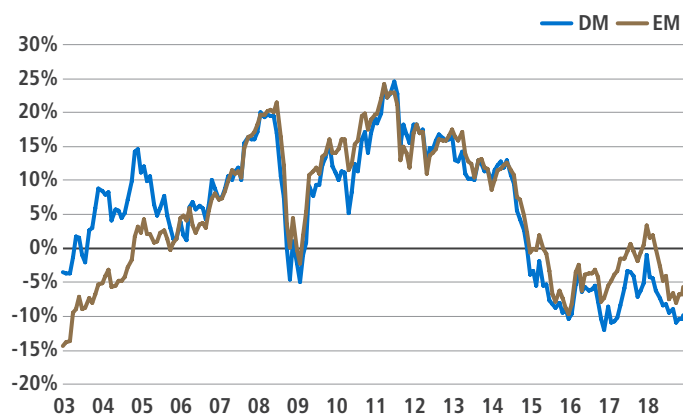


Source: Bloomberg and PIMCO as of 8 January 2019

**Currencies**

For currencies, valuations were comparable, on average, using the PPP criterion (see Exhibit 7). However, as mentioned in the previous section, augmenting the PPP metric with the Balassa-Samuelson criterion will most likely tilt the time series in favor of emerging markets.

**Exhibit 7: Purchasing power parity**

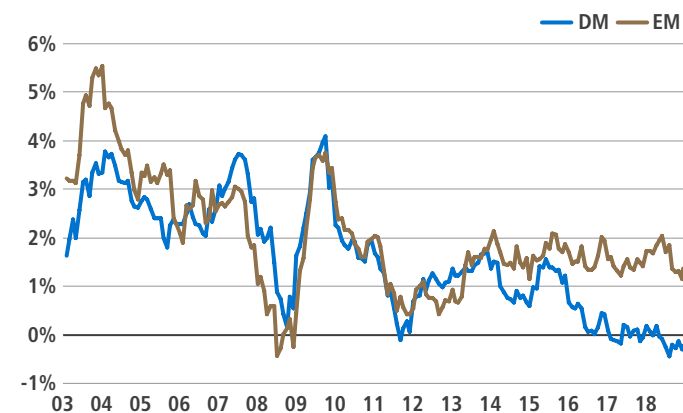


Source: Bloomberg and PIMCO as of 8 January 2019

**Local rates markets**

The EM real yield is 45 bps higher, on average, over the 15-year period. The spread widened substantially over the past four years because DM real yields were trapped near zero while EM real yields “recovered” as both the taper tantrum in 2013 and high growth stabilized yields in the 1.5% to 2.0% range (see Exhibit 8).

**Exhibit 8: Real yield**

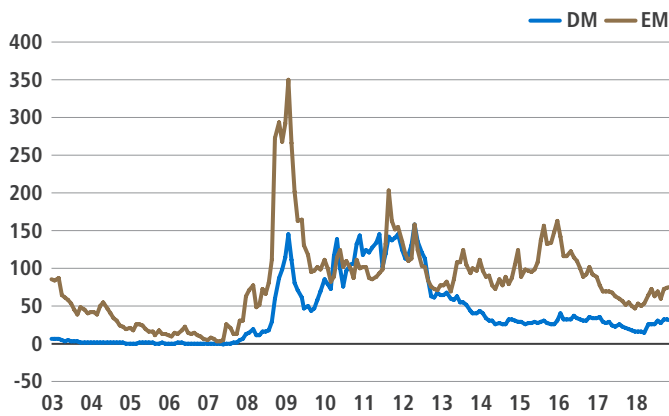


Source: Bloomberg and PIMCO as of 8 January 2019

**External credit markets**

Because the default-adjusted CDS spread is highly sensitive to various assumptions (such as the recovery rate and default probability matrix), especially for high yield credits, Exhibit 9 compares the spread between emerging and developed markets only for investment grade countries. The gap widened after the 2011 European sovereign debt crisis subsided; it now stands at 30–50 bps.

**Exhibit 9: CDS default-adjusted spread**



Source: IHS Markit and PIMCO as of 8 January 2019

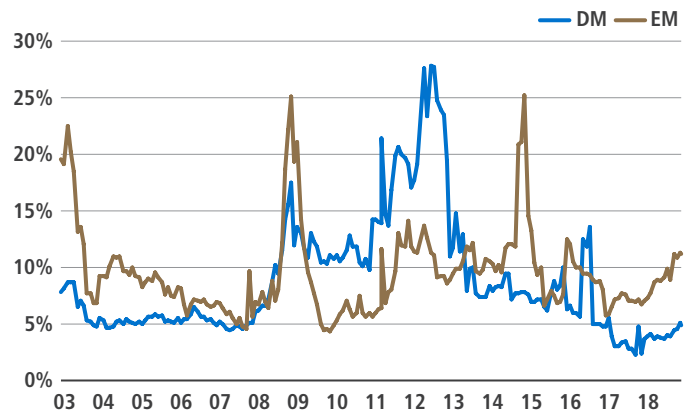
**4. AVAILABLE ALPHA (RELATIVE VALUE OPPORTUNITIES) ALSO HAS BEEN RICHER IN EMERGING MARKETS.**

In this section, we take a closer look at the evolution of relative value opportunities in emerging and developed markets, beginning in 2003. To this end, we consider what we call the dispersion measure. At each point in time for a particular signal (earnings yield, PPP, real yield) and a list of countries, we average the top three and bottom three country signals to obtain the dispersion measure. We view this spread as an indicator of the alpha available in the market.

**Equities**

As Exhibit 10 shows, the available alpha has been more generous in emerging markets over the past 15 years. The data suggest that emerging economies may be more attractive for an investor than developed markets – with an earnings yield dispersion measure of 9.46% versus 8.76%, on average.

**Exhibit 10: Dispersion measure of the earnings yield**

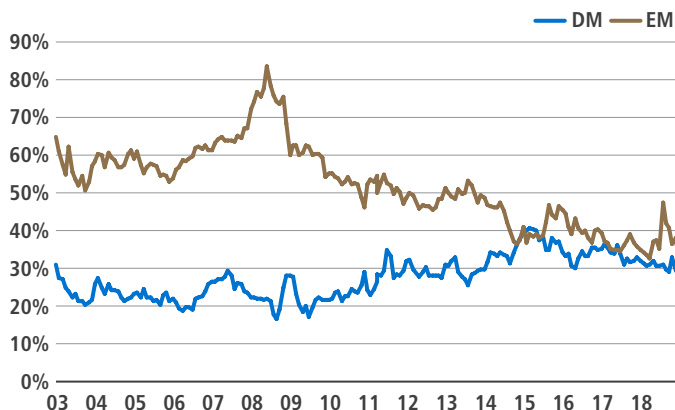


Source: IHS Markit and PIMCO as of 8 January 2019

### Currencies

In foreign exchange, the DM dispersion measure is relatively stable for the entire period, as major currencies have not shown undue volatility, except on a few occasions, during the past 15 years (see Exhibit 11). Furthermore, DM policies were generally coordinated, which lessened the dispersion among currencies. By contrast, some EM currencies were hit particularly hard during the 2008–2009 global financial crisis, producing alpha opportunities.

**Exhibit 11: Dispersion measure for purchasing power parity**



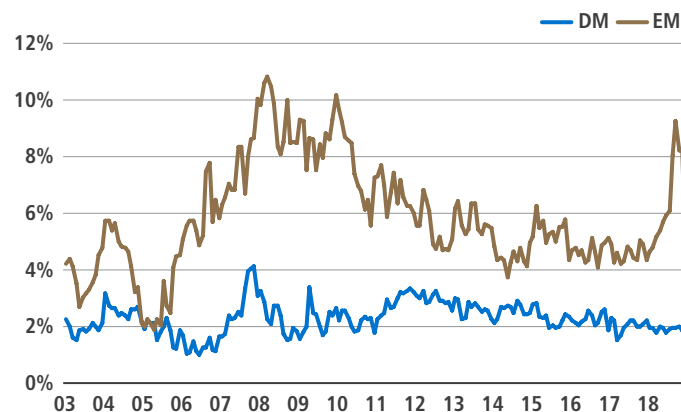
Source: IHS Markit and PIMCO as of 8 January 2019

### Local rates markets

As pointed out in Section 2, we see much more dispersion in EM real yields.

What is true in the cross section is also true in the time series. Why? There is a wider variety of monetary policies within the EM block: The dispersion measure in emerging markets (5.85%, on average) is wider than in developed markets (2.28%, on average), as Exhibit 12 shows.

**Exhibit 12: Dispersion measure of real yields**

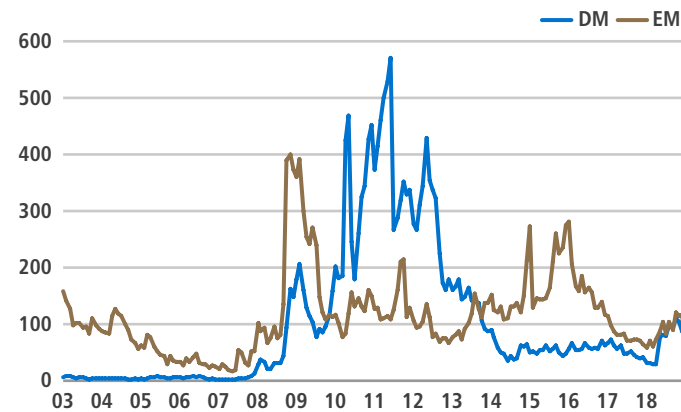


Source: Bloomberg and PIMCO as of 8 January 2019

### External credit markets

As in Section 3, we observe the same structural regime shift after the 2011 European sovereign debt crisis. The dispersion is currently higher in emerging markets despite the recent surge in Italian CDS spreads (see Exhibit 13).

**Exhibit 13: Dispersion measure for CDS defaulted-adjusted spreads**



Source: IHS Markit and PIMCO as of 8 January 2019

## 5. BEHIND EM RISK PREMIA, THERE IS A RICH CATALOG OF CRISES AND CONTAGION STORIES.

We have argued that estimated returns in emerging markets are significantly higher than in developed markets. One central question is whether this is caused by inherently higher EM risk. In this section, we try our hand at listing EM macroeconomic risk factors. The past 50 years provide abundant examples of financial crises. Here is a short list of stylized facts that typify these crises:

1) **Moral hazard** refers to a situation in which economic agents are protected from risky outcomes – by their government, for example – and take too much risk as a result. Enabling factors include implicit or sometimes explicit guarantees on bank lending to the corporate or household sectors, public sector bank lending and unfunded deposit insurance schemes. Bank runs are often the unanticipated result of moral hazard.

Moral hazard also can stem from excessive borrowing in foreign currencies on the basis of explicit or implicit government promises to underwrite exchange rates. Faced with the prospect of losing access to external borrowing or suffering a banking crisis, sovereign governments must choose between assuming liabilities of the private sector and allowing large parts of the economy to go bankrupt.

2) **Deregulation**, in the form of financial sector opening and capital account liberalization, has typically resulted in serious imbalances: A sharp decline in real interest rates stimulates domestic demand, boosts domestic asset prices and exchange rates, and shifts resources from the tradable to the nontradable sectors of the economy, often leading to unsustainable macroeconomic and financial imbalances.

3) **Policy inconsistencies** can worsen the effects of moral hazard and deregulation. Monetary policy may remain too tight for too long as a result of fiscal rigidities or political intransigence. Even where there is strong political will to adjust, fiscal policy will rarely tighten enough in response to strong capital inflows.

A well-known example is the “impossible trinity,” a concept which states that a country cannot simultaneously have an independent monetary policy, a fixed exchange rate and free

capital flows. Even if only one of the three must give, countries may find themselves in a bind: If they increase the interest rate to avoid devaluation, they risk a recession; if they let the devaluation happen, they risk high inflation; if they loosen capital controls, they risk onerous outflows.

4) **Fiscal dominance**, a situation in which the size of fiscal imbalances jeopardizes the effectiveness and credibility of monetary policy, was a frequent feature of crises before the turn of the century. It has become a threat again in the wake of sharp increases in public debt levels across a large swath of developed and emerging economies.

The onset of fiscal dominance constrains central banks from pursuing optimal monetary policies aimed at achieving inflation objectives. Fiscal and monetary policies typically become inseparable. Fiscal dominance does not always result in rapidly accelerating inflation, but it constrains monetary policy in ways that distort macro and financial balances. Symptoms include shortened maturity structures to public debt (thus increasing liquidity risks), reliance on seigniorage for fiscal revenues and shallow domestic financial markets.

5) **Rapid increases in leverage**, another clear warning sign of a crisis to come, often spawn asset price booms in real estate and financial markets. The interaction of financial variables with the real economy, normally in the form of rapid credit growth, determines the severity of the ensuing crisis.

The drivers of asset price booms vary from decade to decade, but almost all booms have some combination of sharply declining real interest rates and accelerating credit growth behind them.

6) **Balance sheet mismatches** in one or more sectors of the economy have been the defining feature of financial panics, whether in the form of a currency collapse, a banking sector crisis or a debt crisis. Mismatches can develop in the form of currency (excessive borrowing in foreign currency) or maturity (when long-term lending by banks, corporations or the public sector is funded by short-term liabilities). Mismatches are typically associated with periods of credit booms: Excessive borrowing by one or several sectors of the economy tends to lead to an overvalued exchange rate and domestic asset price bubbles.

7) **Contagion within and across economies** is an important propagation mechanism for crises. Common creditors to a group of similar borrowers, whether private or public, suffer losses that lead to risk reduction across their portfolios. Indiscriminate selling raises the bar on what constitutes a financially healthy asset.

### Crisis propagation

Feedback loops between macro and financial variables can develop in either direction. Broadly, moral hazard and deregulation have acted as potent seeds for imbalances. Inconsistent policy mixes (of which fiscal dominance is a more extreme form) exacerbate imbalances on the way up, propagating asset price booms through leverage and growing balance sheet mismatches; contagion plays an enabling role on the way down.

The 1997–1998 Asian financial crisis saw bank runs driven by domestic moral hazard considerations, such as crony lending in Korea, Indonesia and Malaysia. External moral hazard occurred when crawling or fixed exchange rate regimes provided subsidized access by foreign lenders to domestic borrowers in Mexico (1994), Asia (1997–1998), Russia (1998), Turkey (2001) and Argentina (2002).

The propensity of many EM central banks to intervene in foreign exchange markets before the 2008 global financial crisis and, indeed, in the period leading up to the 2013 taper tantrum,

also fostered moral hazard. Interventions provided an illusory subsidy to foreign investors, dampening volatility and encouraging a false sense of security about exit costs. Subsequent currency depreciations proved contractionary, as they exacerbated balance sheet mismatches.

Meanwhile, financial deregulation failed to provide the much-touted boost to domestic savings and instead led to sharp declines in real interest rates, rapid increases in domestic demand, worsening current accounts and, ultimately, some form of crisis.

In many crises between the 1980s and early 2000s, inflation stabilization programs typically commenced with tight monetary policies aimed at compensating for excessively loose fiscal policy. Exchange rate overvaluations led to recessions and forced devaluations that undermined debt sustainability. Turkey in 2001 and Argentina in 2002 marked the nadir of these crises but certainly not the end of them.

More recently, amid low interest rates and unconventional monetary policies in developed economies, EM governments have once again been unable to adjust their policies quickly enough to mitigate the effects of strong capital inflows on domestic financial conditions. Russia (2008), Brazil (2011–2013) and Turkey (2011–2014), among others, have experienced similar phenomena – rapid declines in real interest rates, overvalued exchange rates and excessive domestic credit growth – which have ultimately led to subtrend growth, if not outright recession.



**6. CRISIS RISK IN DEVELOPED MARKETS IS SUBSTANTIALLY HIGHER. QUITE POSSIBLY, THE LAST SHALL BE FIRST.**

The data we have presented broadly suggests that estimated returns are higher in emerging economies than in developed markets over the three main liquid asset classes: equities, currencies and sovereign fixed income. Estimated Sharpe ratios paint a muddier picture, as volatility has been substantially higher in emerging markets.

This raises the question: Do return differentials all come down to higher EM crisis risk? Or should investors reasonably expect the volatility differential between emerging and developed markets to tighten going forward? These questions go to the core of what has traditionally distinguished emerging from developed economies: the propensity of a market to experience fat left tails borne of illiquidity.

Liquidity is generally considered a seminal factor in asset pricing. Empirically, the strength of the legal regime and political stability are important differentiating factors in expected returns within emerging markets and between emerging and developed economies. Emerging markets are more prone to bouts of illiquidity because of deficiencies in the rule of law and the strength of institutions (which buffer against the risks of moral hazard and fiscal dominance), and the

prevalence of information asymmetries (for example, between locals and foreigners or where corporate ownership is concentrated).

The fact that most emerging economies have undergone a process of market liberalization and institutional reforms underpins the income convergence of emerging markets toward that of developed markets over the past 25 years. Market liberalization; the shift toward independent, inflation-targeting central banks and floating exchange rates (which allow for the release of pressures gradually rather than discretely); and other institutional reforms that have served to deepen domestic savings pools all have worked to mitigate the frequency and severity of liquidity events. But even after liberalization efforts, risks around the rule of law and political stability remain more salient to emerging markets than to developed markets.

To reach workable conclusions, we need to examine the differences between emerging and developed markets, we make use of the risk taxonomy discussed above. We focus the discussion on three factors with a large impact on asset returns: growth, policy and leverage. Indeed, low-growth traps, policy mistakes and excess leverage tend to inflict exorbitant losses on risky assets.

### Growth

To say that emerging economies have outgrown and are expected to continue to outgrow developed markets is to state the obvious. Over the past 20 years, per capita real GDP growth in emerging markets averaged 4.5%, versus 2.2% in developed markets.

Why is EM growth higher? First and more generally, rapid technology diffusion from developed markets to emerging economies accelerated EM growth via increased labor force participation and higher investment. Second and more selectively, structural reforms (political as well as economic) and large increases in trade led total factor productivity growth to outpace that of the developed markets.

EM growth outperformance was most pronounced where the quality and credibility of EM policymaking improved. There were three main shifts: from fixed to floating exchange rates, from external to local currency debt as the primary form of government borrowing, and the adoption of credible inflation-targeting regimes. These developments lowered the volatility of EM growth cycles on a secular basis, thus reducing equilibrium real interest rates and boosting growth.

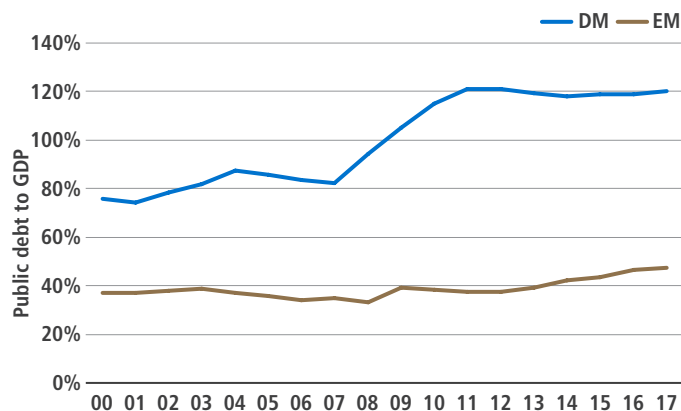
The edge in EM growth should persist. Projected PPP GDP for 2050 shows China and India ahead of the U.S., Mexico ahead of Japan and Nigeria ahead of Germany. To the extent markets mirror economies, this scenario should reflect well on the growth of risky assets.

### Policy: Do as I say, not as I do

As noted earlier, fiscal dominance refers to benevolent central banks ensuring the solvency of governments by financing fiscal deficits. Until recently, fiscal dominance and central bank subjugation to governments, the two horsemen of the inflation apocalypse, were the preserve of emerging markets.

Our readers are familiar with the narrative that led to excessive public debt-to-GDP ratios in developed markets: a transfer of household and financial debt to government balance sheets, stimulative fiscal policy and subpar growth leading to further public deficits (see Exhibit 14).

Exhibit 14: Public debt to GDP



Source: Bloomberg, Haver Analytics and PIMCO as of 29 June 2018

This excessive public debt-to-GDP went hand in hand with a record expansion in DM base money, as shown in Exhibits 15 and 16. The twin growth of public debt and base money in developed economies makes unclear whether the risk of a serious policy mistake is greater in developed markets or emerging markets. In Japan, for instance, something has to give: Total debt is close to

600% of GDP, the central bank owns almost 50% of government bonds outstanding, and 10-year yields are trading close to zero. Emerging markets appear to be good pupils with incoherent teachers – DM countries that taught them fiscal and monetary rectitude in a clear case of “Do as I say, not as I do.”

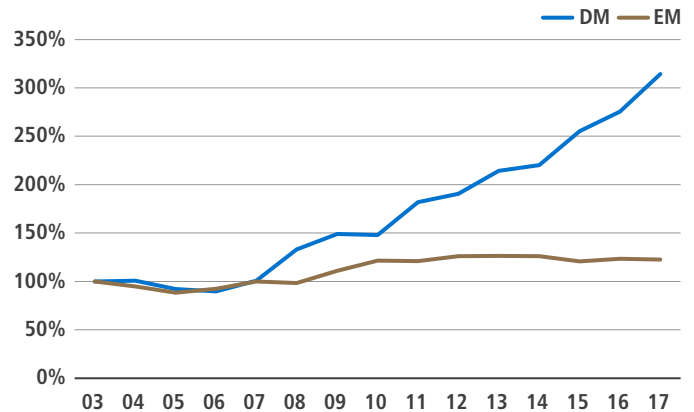
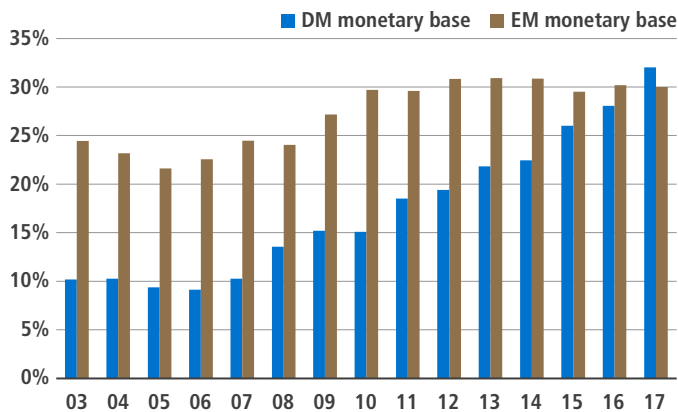
**Exhibit 15: Monetary base in major developed and emerging economies: 2017, 2008 and 2003**

Index name	Monetary base (% GDP) (Q4 2017)	Monetary base (% GDP) (Q4 2008)	Monetary base (% GDP) (Q4 2003)
U.S.	15.74%	11.24%	6.26%
Japan	87.14%	22.13%	23.29%
Eurozone	30.27%	12.91%	8.71%
<b>GDP-weighted average</b>	<b>30.04%</b>	<b>13.55%</b>	<b>10.19%</b>

Index name	Monetary base (% GDP) (Q4 2017)	Monetary base (% GDP) (Q4 2008)	Monetary base (% GDP) (Q4 2003)
China	40.42%	40.44%	38.45%
Brazil	16.76%	10.74%	15.36%
India	8.19%	7.26%	9.00%
Indonesia	8.47%	6.80%	9.40%
Russia	16.19%	10.63%	14.17%
<b>GDP-weighted average</b>	<b>30.00%</b>	<b>24.05%</b>	<b>24.45%</b>

Source: Bloomberg and PIMCO as of 29 June 2018

**Exhibit 16: Monetary-base-to-GDP ratio (index = 100 in the RHS graph)**



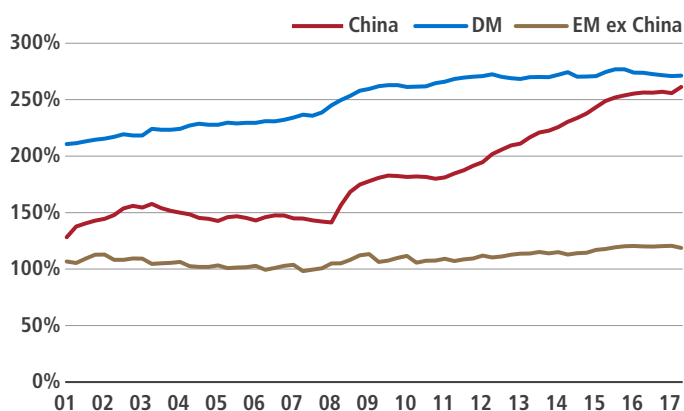
Source: Bloomberg and PIMCO as of 29 June 2018

## Leverage

Last but not least, we contrast leverage in developed and emerging economies. The measure we use is total debt to GDP, where total debt refers to public, corporate nonfinancial and household debt. Exhibit 17 tells three different stories. Developed markets have not really improved their situation, suggesting that high debt levels will remain an overhang to growth and asset returns. Total debt to GDP is about 40 percentage points higher than at the onset of the global financial crisis in June 2007.

Leverage in emerging markets ex China is low and has grown slowly over the past two decades. China, however, appears to be the prime offender – its leverage has risen by 70% over the past 10 years. But given still-low levels of per capita income, China still has some potential to grow its way out of its debt overhang.

**Exhibit 17: Total debt to GDP**



Source: Bank for International Settlements and PIMCO as of 31 March 2018

At this point, an elephant in the room needs to be noted: entitlements. Public entitlements (healthcare, old-age benefits) are, by and large, a DM affair, and the net present value of entitlement-related deficits is not accounted for in the total debt numbers. Yet just for entitlements, the net-present-value-to-GDP ratio is estimated to be as high as 1,200% in the U.S. and close to 500% in Europe. Clearly, entitlements paint a darker picture for long-term DM prospects, over and above the factors already discussed, underscoring the challenge for developed markets to grow their way out of their debt problems.

## 7. BASIC RULES OF THUMB SHOW THAT ALLOCATIONS TO EMERGING MARKETS ARE SUBOPTIMAL.

This section builds on the prior analysis and offers what we believe is a more constructive approach to EM equity and debt allocations.

To estimate expected returns, we follow one of two different methods: We estimate the expected real equity return either by using the inverse of the cyclically adjusted price-to-earnings ratio, or CAPE (Method 1), or by adding the real bond yield to the buyback-adjusted dividend yield (Method 2), as shown in Exhibit 18.

**Exhibit 18: MSCI World and MSCI Emerging Markets fundamentals**

Index	CAPE	Dividend yield	Buyback	Real yield
MSCI World Index	21.0	2.8%	0.3%	0.4%
MSCI Emerging Markets Index	12.4	2.9%	0.0%	1.9%

Source: PIMCO as of 4 January 2019. Hypothetical example for illustrative purposes only.

Both methods make two simplifying assumptions. First, they assume that real exchange rates are at fair value. This allows us to exclude the question of exchange rates from the analysis. If anything, this assumption favors developed markets because EM currencies are cheap relative to DM currencies. Second, they assume that the real bond yield and real dividend growth are equal. We can therefore use the dividend yield as a proxy for the equity risk premium.

The optimal allocation to DM and EM equities is then the tangency point on the efficient frontier generated by a naive mean-variance optimization. As Exhibit 19 shows, under Method 1 the optimal EM allocation is 66%. Under Method 2, we find an optimal EM allocation of 70%. Under both methods, it appears that the major indices are underallocated to EM equities, which currently compose 14% of the global portfolio.

**Exhibit 19: Optimal allocations**

Index	Current allocation	Optimal allocation Method 1	Optimal allocation Method 2
MSCI World Index	86%	34%	30%
MSCI Emerging Markets Index	14%	66%	70%

Source: PIMCO as of 4 January 2019. Hypothetical example for illustrative purposes only.

From the current composition of the MSCI ACWI, we also infer the implied CAPE and dividend yield of EM equities (see Exhibit 20). In both cases, implied yields are lower than actual yields. This is yet another way of saying that investors are underallocated to emerging markets.

**Exhibit 20: Implied MSCI Emerging Markets Index fundamentals based on the optimizations**

Index	Implied CAPE Method 1	Implied dividend yield Method 2
MSCI Emerging Markets Index	14.1	3.1%

Source: PIMCO as of 4 January 2019. Hypothetical example for illustrative purposes only.

**Fixed income market**

Transposing similar methodologies to the fixed income market is more challenging due to the diverse mix of maturities and ratings of bonds included in the benchmarks. As of January 2019, less than 4% of the market capitalization of the Bloomberg Barclays Global Aggregate Index was allocated to EM bonds, whereas the EM global bond market is estimated to have 19% of the total share.<sup>1</sup>

<sup>1</sup> Source: Bank for International Settlements and PIMCO as of 30 June 2018. The estimated global bond market is around \$110 trillion, with \$21 trillion issued by EM countries.

**8. IN VIEW OF VALUATION, LIQUIDITY AND SYSTEMIC RISK, THERE IS A STRONG STRUCTURAL CASE FOR EMERGING ASSETS.**

To summarize, the data point to higher estimates of expected returns in emerging markets than in developed markets across asset classes. Sharpe ratio estimates are less conclusive, given the higher volatility in emerging economies. As investors, we need to decide whether the structural reasons for higher risk premia in emerging markets are likely to persist in the future or whether EM assets will benefit from convergence toward DM assets. When we look in more detail at fundamentals, many aspects of DM countries’ structural advantages have deteriorated in the wake of the global financial crisis.

At the same time, the crisis proved that emerging and developed markets are prone to similar jump risks, though perhaps at different frequencies. Securitization and the rise of financial engineering have led to the proliferation of illiquid fixed income securities within developed markets. Meanwhile, increased regulation around financial intermediation, coupled with DM central bank purchases of large percentages of government debt, has served to reduce market liquidity and skew valuations to extreme levels in DM fixed income markets.

On the EM side, shifts to floating exchange rates, inflation-targeting regimes and local debt financing have lowered macroeconomic volatility and, in turn, sovereign default risk. Although the sources of liquidity risk may be different, the key point is that EM liquidity risks appear to be in secular decline while DM liquidity risks have risen. An important threat to this view stems from rising U.S. protectionism, which, at least temporarily, has scope to reverse the powerful globalization theme of the past 30 years.

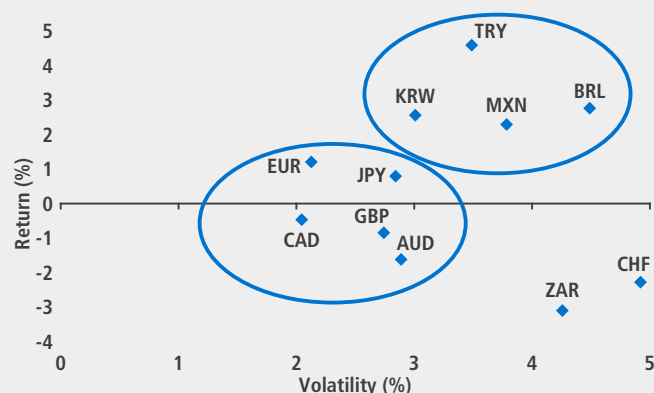
All in all, in view of these liquidity, valuation and systemic risk factors, we believe there is a strong case for a larger share of emerging market assets in global portfolios.

# Examples of Higher EM Risk Premia Include Currency Volatility and CDS

## 1. SELLING FX VOLATILITY: EMERGING MARKETS VERSUS DEVELOPED MARKETS

One widely known systematic strategy for harvesting EM risk premia is to sell currency (FX) volatility via FX options (see Exhibit 21). The contrast between the EM and DM blocs is clear: Even after adjusting for transaction costs, EM currency volatility sales can be much more attractive than DM currency volatility sales on a volatility-adjusted basis.

**Exhibit 21: FX vol sales, delta neutral 1-month at-the-money straddle (10 January 2002 to 4 October 2018\*)**



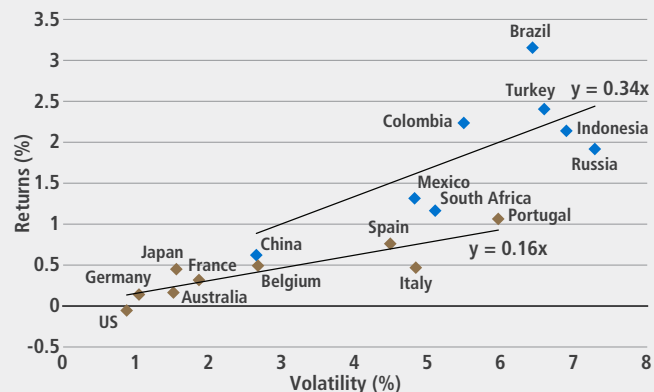
Source: PIMCO as of 4 October 2018

\* In steady state, the strategy makes weekly option sales of 1 million options. The USD notional is normalized to 100 per option leg. When delta hedging, the whole portfolio is hedged using a 1-month FX forward contract, which is rolled at its expiry. **Hypothetical example for illustrative purposes only.** Chart provided for illustrative purposes and is not indicative of the past or future performance of any PIMCO product.

## 2. SELLING CDS PROTECTION (EMERGING MARKETS VERSUS DEVELOPED MARKETS)

Another example is underwriting sovereign credit risk via five-year CDS. As Exhibit 23 shows, on a risk-adjusted basis there can be more risk premium embedded in EM sovereign CDS than in DM sovereign CDS.

**Exhibit 23: Selling 5-year CDS protection (2 January 2004 to 4 October 2018\*)**

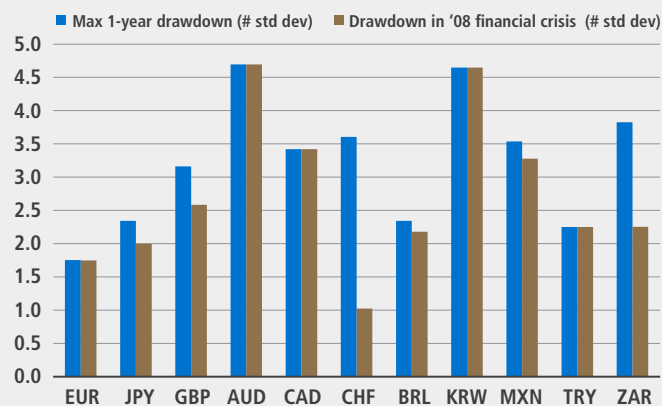


Source: HIS Markit and PIMCO as of 4 October 2018

\* The strategy sells 5-year on-the-run CDS, with constant notional. **Hypothetical example for illustrative purposes only.** Chart provided for illustrative purposes and is not indicative of the past or future performance of any PIMCO product.

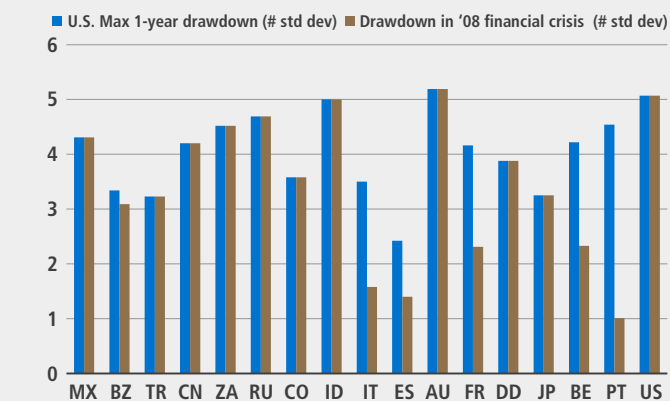
One might naturally assume the above risk premium in an EM FX volatility sale is compensation for the left tail risk in EM countries. As Exhibit 22 shows, the 2008 drawdown was moderately larger in emerging markets than in developed markets. However, over a longer time horizon, the one-year maximum drawdown in emerging markets is similar to that in developed markets (basket average: 3.2 sigma versus 3.3 sigma).

**Exhibit 22: Drawdown properties, FX vol sale, delta neutral 1-month at-the-money straddle**



We also compare the drawdown of the strategy in developed and emerging markets. Exhibit 24 shows that despite larger drawdowns on EM CDS than DM CDS during the 2008 financial crisis, the EM CDS drawdown was not much greater than the DM CDS drawdown over a longer time horizon (basket average 4.1 sigma versus 4.0 sigma).

**Exhibit 24: Drawdown properties, selling CDS protection**



To conclude, EM dispersion is substantially higher in all markets in the time series, showing higher available alpha. However, EM and DM volatility-adjusted alphas are similar. Thus, to gauge future opportunities, much hinges on whether volatility in emerging markets will be persistently higher than in developed markets or whether the playing field has actually been leveled.

**APPENDIX 1: EQUITY INDEX MAPPING TABLE**

Country	Ticker
Italy	FTSEMIB Index
UK	UKX Index
Finland	HEX Index
Germany	DAX Index
Spain	IBEX Index
Austria	ATX Index
Netherlands	AEX Index
Belgium	BEL20 Index
France	CAC Index
Japan	NKY Index
Sweden	OMX Index
Canada	SPTSX Index
Australia	AS51 Index
Norway	OSEBX Index
U.S.	SPX Index
Ireland	ISEQ Index
New Zealand	NZSE50FG Index
Greece	FTASE Index
Portugal	PSI20 Index
Switzerland	SMI Index
Russia	RTSI\$ Index
Turkey	XU100 Index
South Korea	KOSPI2 Index
Hungary	BUX Index
Singapore	STI Index
Poland	WIG20 Index
Hong Kong	HSI Index
Czech Republic	CTXEUR Index
China	SHCOMP Index
Taiwan	TWSE Index
Thailand	SET Index
Peru	MXPE Index
Colombia	COLCAP Index
South Africa	TOP40 Index
Malaysia	FBMKLCI Index
Brazil	IBOV Index
Philippines	PCOMP Index
Chile	IPSA Index
Indonesia	JCI Index
India	SENSEX Index
Mexico	MEXBOL Index
Israel	TA-35 Index
Argentina	MERVAL Index

**APPENDIX 2: WHY THE REAL EQUITY YIELD IS EQUAL TO EARNINGS YIELDS**

A stock index price  $P$  is the present value of its dividends, with the initial dividend  $D$  growing at a real rate  $g$  and discounted at a real equity yield  $r$ :

$$P = \int_0^{\infty} D e^{gt} e^{-rt} dt = \frac{D}{r - g}$$

Hence:

$$r = \frac{D}{P} + g$$

With  $R$  designating the real bond yield, the equity risk premium is:

$$ERP = r - R = \frac{D}{P} + g - R$$

With  $i$  the real internal rate of return and  $b$  the earnings retention rate, ( $b = \frac{E_R}{E}$  where  $E_R$  are the retained earnings and  $E$  are the earnings),  $g$  can be written as:

$$g = bi$$

This is true as dividend growth is equal to earnings growth,  $g = \frac{dE}{E}$  and earnings grow at the real internal rate of return achieved on retained earnings, so  $i = \frac{dE}{E_R}$ .

Firms will keep investing until the real internal rate of return matches the real equity yield, hence  $i = r$ . We thus have:

$$P = \frac{D}{r - br} = \frac{D}{r(1 - b)} = \frac{E}{r}$$

therefore:

$$\frac{E}{P} = r$$

**APPENDIX 3: COUNTRY-LEVEL CALCULATIONS****Earnings yields: developed versus emerging markets****Developed markets**

Country	Earnings yield
Austria	9.8%
Italy	9.3%
Germany	8.4%
Spain	7.6%
Netherlands	7.2%
Japan	7.1%
France	6.8%
Belgium	6.5%
Sweden	6.5%
UK	6.3%
Australia	6.3%
Canada	6.3%
Greece	6.1%
U.S.	5.7%
Norway	5.6%
Ireland	5.5%
Finland	5.2%
New Zealand	4.9%
Switzerland	4.5%
Portugal	3.5%
<b>Market weighted average</b>	6.1%
<b>Top three equally weighted average</b>	9.2%
<b>Bottom three equally weighted average</b>	4.3%

**Emerging markets**

Country	Earnings yield
Russia	19.8%
Turkey	15.2%
Korea	11.6%
Hong Kong	10.2%
Hungary	9.1%
Singapore	8.9%
Poland	8.6%
China	8.6%
Czech Republic	8.4%
Taiwan	8.2%
Colombia	8.1%
Argentina	7.7%
Peru	7.4%
South Africa	6.8%
Thailand	6.3%
Chile	5.6%
Philippines	5.3%
Malaysia	5.3%
Brazil	5.1%
Indonesia	5.0%
Mexico	4.9%
India	4.2%
Israel	4.1%
<b>Market weighted average</b>	8.5%
<b>Top three equally weighted average</b>	15.5%
<b>Bottom three equally weighted average</b>	4.4%

Source: Bloomberg and PIMCO as of 8 January 2019. See Appendix 2 for details of country-level calculations.



## Currency valuations: developed versus emerging markets

### Developed markets

Currency	PPP
New Zealand	9.7%
Switzerland	6.8%
Australia	-1.3%
UK	-8.2%
Eurozone	-8.3%
Canada	-14.1%
Japan	-16.1%
Norway	-20.8%
Sweden	-36.3%
<b>Equally weighted average</b>	<b>-9.8%</b>
<b>Top three equally weighted average</b>	<b>-24.4%</b>
<b>Bottom three equally weighted average</b>	<b>5.1%</b>

Currency	Ex ante Sharpe
Sweden	0.62
Canada	0.32
Japan	0.23
Norway	0.16
Australia	0.02
UK	-0.02
Eurozone	-0.10
New Zealand	-0.17
Switzerland	-0.40
<b>Equally weighted average</b>	<b>0.07</b>
<b>Top three equally weighted average</b>	<b>0.39</b>
<b>Bottom three equally weighted average</b>	<b>-0.22</b>

Source: Bloomberg and PIMCO as of 8 January 2019. Hypothetical example for illustrative purposes only.

### Emerging markets

Currency	PPP
Czech Republic	13.8%
China	9.0%
Singapore	4.7%
Israel	3.4%
Philippines	3.1%
Peru	1.3%
Russia	0.3%
Thailand	-0.9%
Indonesia	-1.0%
Hungary	-2.3%
South Korea	-2.6%
India	-3.3%
Poland	-5.7%
Brazil	-8.2%
Chile	-9.0%
Colombia	-10.1%
Malaysia	-13.3%
Taiwan	-16.3%
Mexico	-17.0%
Turkey	-28.5%
South Africa	-35.0%
<b>Equally weighted average</b>	<b>-5.6%</b>
<b>Top three equally weighted average</b>	<b>-26.8%</b>
<b>Bottom three equally weighted average</b>	<b>9.2%</b>

Currency	Ex ante Sharpe
Indonesia	0.82
Turkey	0.79
Mexico	0.77
India	0.73
Malaysia	0.68
South Africa	0.54
Poland	0.30
Brazil	0.30
Russia	0.25
Thailand	0.24
Peru	0.23
Colombia	0.20
Taiwan	0.15
Chile	0.13
China	0.12
South Korea	0.11
Singapore	0.06
Philippines	-0.07
Hungary	-0.30
Czech Republic	-0.31
Israel	-0.50
<b>Equally weighted average</b>	<b>0.25</b>
<b>Top three equally weighted average</b>	<b>0.79</b>
<b>Bottom three equally weighted average</b>	<b>-0.37</b>

Source: Bloomberg and PIMCO as of 8 January 2019. Hypothetical example for illustrative purposes only.

## 10-year real yields: developed versus emerging markets

### Developed markets

Country	10-year real yield
New Zealand	1.54%
Australia	0.90%
Canada	0.58%
U.S.	0.37%
Norway	0.30%
Eurozone	-0.52%
Sweden	-0.56%
Switzerland	-0.70%
Japan	-0.73%
UK	-1.68%
<b>Equally weighted average</b>	<b>-0.05%</b>
<b>Top three equally weighted average</b>	<b>1.00%</b>
<b>Bottom three equally weighted average</b>	<b>-1.03%</b>

### Emerging markets

Country	10-year real yield
Russia	5.01%
Indonesia	4.77%
Mexico	3.77%
Peru	3.42%
South Africa	3.27%
Colombia	2.83%
China	2.31%
Singapore	1.79%
India	1.65%
Thailand	1.45%
Israel	1.32%
Chile	1.26%
South Korea	0.76%
Poland	0.76%
Malaysia	0.69%
Hong Kong	0.67%
Taiwan	0.05%
Turkey	-0.06%
Czech Republic	-0.59%
Hungary	-0.59%
Philippines	-1.80%
Brazil	-1.89%
<b>Equally weighted average</b>	<b>1.40%</b>
<b>Top three equally weighted average</b>	<b>4.52%</b>
<b>Bottom three equally weighted average</b>	<b>-1.43%</b>

Source: Bloomberg and PIMCO as of 8 January 2019. The real yield is defined as the 10-year nominal yield minus current local inflation.

### Five-year credit default swap spreads: developed versus emerging markets

#### Developed markets

Country	5-year CDS spread
Italy	244
Portugal	81
Spain	64
Greece	59
Canada	31
France	26
Ireland	24
UK	23
Belgium	18
New Zealand	15
Australia	15
U.S.	15
Japan	14
Austria	11
Germany	10
Finland	10
Norway	9
Sweden	9
Netherlands	9
Switzerland	8
<b>Equally weighted average</b>	<b>35</b>
<b>Top three equally weighted average</b>	<b>130</b>
<b>Bottom three equally weighted average</b>	<b>9</b>

#### Emerging markets

Country	5-year CDS spread
Turkey	280
South Africa	176
Brazil	136
Indonesia	114
Mexico	100
India	96
Russia	90
Colombia	86
Malaysia	85
Philippines	60
Israel	59
Peru	59
China	55
Poland	52
Hungary	43
Chile	35
South Korea	34
Taiwan	31
Czech Republic	30
Hong Kong	28
Thailand	24
<b>Equally weighted average</b>	<b>80</b>
<b>Top three equally weighted average</b>	<b>197</b>
<b>Bottom three equally weighted average</b>	<b>27</b>

Source: IHS Markit and PIMCO as of 8 January 2019.

#### APPENDIX 4: THE BALASSA-SAMUELSON EFFECT

The Balassa-Samuelson effect provides a cogent explanation of two empirical observations. First, the real exchange rate of advanced economies is overvalued (for example, haircuts are more expensive in developed markets than in their emerging counterparts). Second, the real exchange rate of countries with high productivity growth (typically, developed economies) tends to appreciate over time.

Why does this happen? Imagine a developed market and an emerging market. Both economies consist of tradable goods (for example, scissors) and nontradable goods (haircuts). A DM worker's productivity is higher than that of an EM worker in the tradable goods sector because the capital stock is higher in developed economies. The workers' productivity in the nontradable sector is the same.

Being more productive, a DM worker's salary will therefore be higher than an EM worker's salary in the tradable goods sector. Because national labor markets are integrated (workers can move freely across sectors), DM hairdressers – even though they are as productive as EM hairdressers – will be paid the same higher salary as the DM worker producing scissors. So the haircut will be more expensive in developed markets than in emerging markets (whereas EM and DM scissors all trade at one price because they are tradable). In other words, the real exchange rate of the advanced economy is overvalued.

Over time, as the EM capital stock catches up with the DM capital stock (meaning emerging markets will have higher productivity growth), by the same mechanism described above, the EM real exchange rate will appreciate.

Mathematically, the real exchange rate  $r$  is defined by:

$$r = \frac{ep^*}{p}$$

where  $e$  is the nominal exchange rate (number of EM currency units per DM currency unit),  $p^*$  is the DM CPI and  $p$  is the EM CPI. If  $a$  is the weight of nontradable goods in both economies, then

$$r = \frac{eP_T^{*1-a}P_N^{*a}}{P_T^{1-a}P_N^a}$$

But EM and DM tradable goods trade at one price, meaning

$$eP_T^* = P_T.$$

It follows that

$$r = \frac{\left(\frac{P_N^*}{P_T^*}\right)^a}{\left(\frac{P_N}{P_T}\right)^a}$$

Because the ratio of nontradable to tradable goods prices is higher in developed markets than in emerging markets, then the DM real exchange rate is overvalued ( $r > 1$ ).

In time, as EM productivity catches up, the denominator grows more than the numerator of the right-hand side of the equation and the EM real exchange rate appreciates ( $r$  falls).

**APPENDIX 5: REAL YIELD AND GROWTH IN A TOY MODEL**

Consider a two-period model: Consumption at time  $t$  is denoted by  $c_t$ , and the utility discount rate by  $\rho$ :

$$\max_{c_t, c_{t+1}} u(c_t) + e^{-\rho} \mathbb{E}_t[u(c_{t+1})]$$

with the budget constraint:

$$c_t + e^{-r} c_{t+1} = Y.$$

Defining the Lagrangian:

$$\mathcal{L} = u(c_t) + e^{-\rho} \mathbb{E}_t[u(c_{t+1})] - \lambda [Y - c_t - e^{-r} c_{t+1}]$$

we can write:

$$\frac{\partial \mathcal{L}}{\partial c_t} = \frac{\partial \mathcal{L}}{\partial c_{t+1}} = \frac{\partial \mathcal{L}}{\partial \lambda} = 0$$

$$\begin{cases} u'(c_t) = \lambda \\ e^{-\rho} \mathbb{E}_t[u'(c_{t+1})] = \lambda e^{-r} \\ c_t - e^{-r} c_{t+1} = Y. \end{cases}$$

Assuming a logarithmic utility function and a lognormal random walk for consumption:

$$\begin{cases} u(c_t) = \ln(c_t) \\ c_{t+1} = c_t e^{(g - \frac{\sigma^2}{2}) + \sigma \varepsilon} \end{cases}$$

where  $\varepsilon \sim N(0,1)$  and  $g$  is consumption growth.

Then it follows that:

$$\mathbb{E}_t \left[ \frac{u'(c_{t+1})}{u(c_t)} \right] = e^{(g - \frac{\sigma^2}{2})} \mathbb{E}_t[e^{\sigma \varepsilon}] = e^{\rho - r}.$$

Using the moment-generating function for a normal distribution:

$$e^{g - \sigma^2} = e^{\rho - r}$$

we conclude that real yield is proportional to real growth:

$$r = g + \rho - \sigma^2.$$





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