APRIL 5, 2018

AGENDA ITEM 4
INFORMATION ITEM

SCHOLARSHARE INVESTMENT BOARD

Discussion on Emerging Market Debt

Background

At the ScholarShare Investment Board (SIB or Board) meeting on December 14, 2017, the program manager, TIAA-CREF Tuition Financing, Inc. (TFI), provided a review of the asset allocation of the investment portfolios for the ScholarShare 529 College Savings Plan (Plan) and a general overview of a new asset class "Emerging Market Debt." Due to the complexity associated with the introduction of this asset class, SIB staff requested additional analysis of this new asset class to be discussed at a subsequent Board meeting. As a follow-up, the Board's investment consultant, Pension Consulting Alliance, LLC (PCA), reviewed the new asset class and has provided an in-depth analysis, which is included in this agenda item. PCA will present this review and analysis of Emerging Market Debt to the Board for further discussion.

Presenter

Eric White, Principal, Pension Consulting Alliance, LLC

SCHOLARSHARE INVESTMENT BOARD

Emerging Market Debt Discussion

April 2018

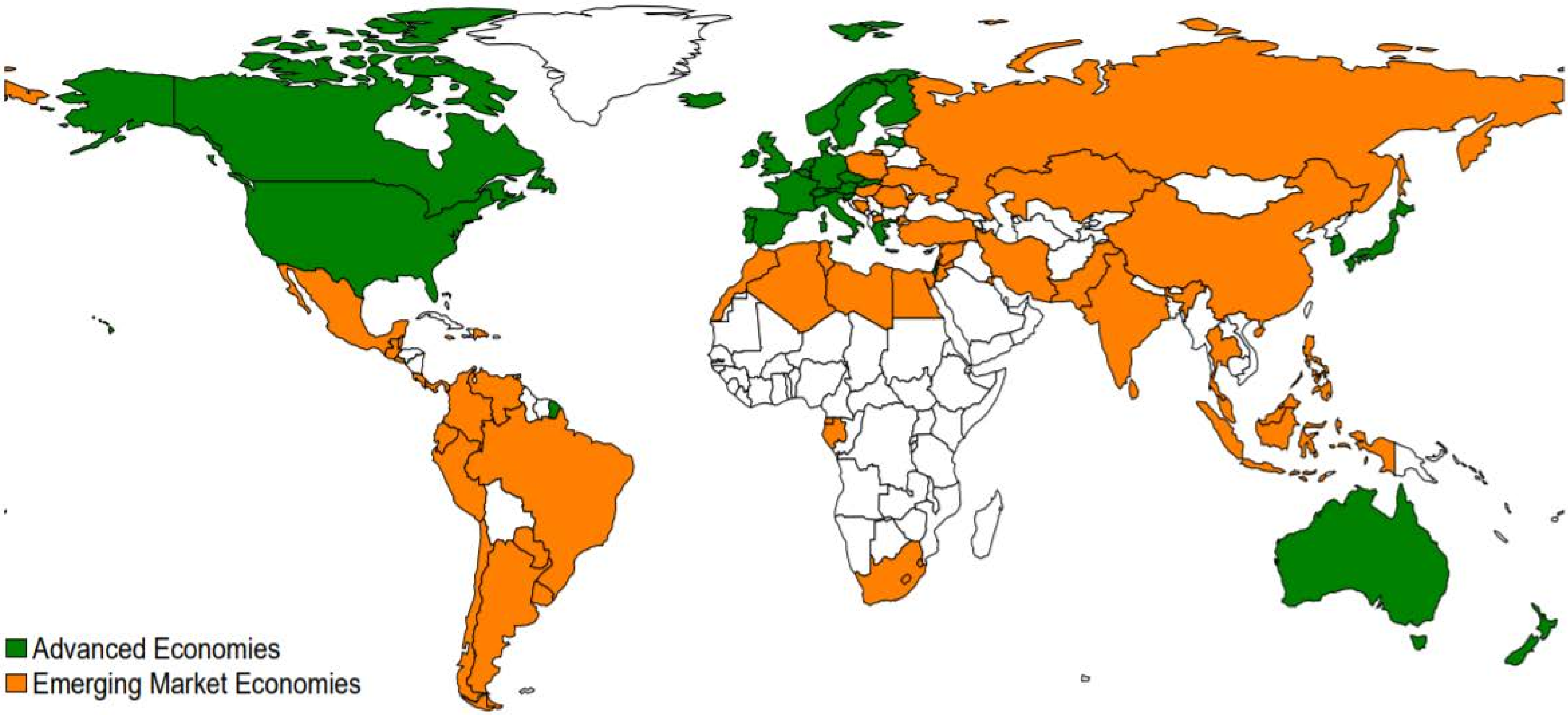
PCA PENSION CONSULTING ALLIANCE

Agenda Items

Section 1: Emerging Market Debt – Introduction

PCA PENSION CONSULTING ALLIANCE

Emerging Market Debt – Introduction



Source: IMF

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Emerging Market Debt – Introduction

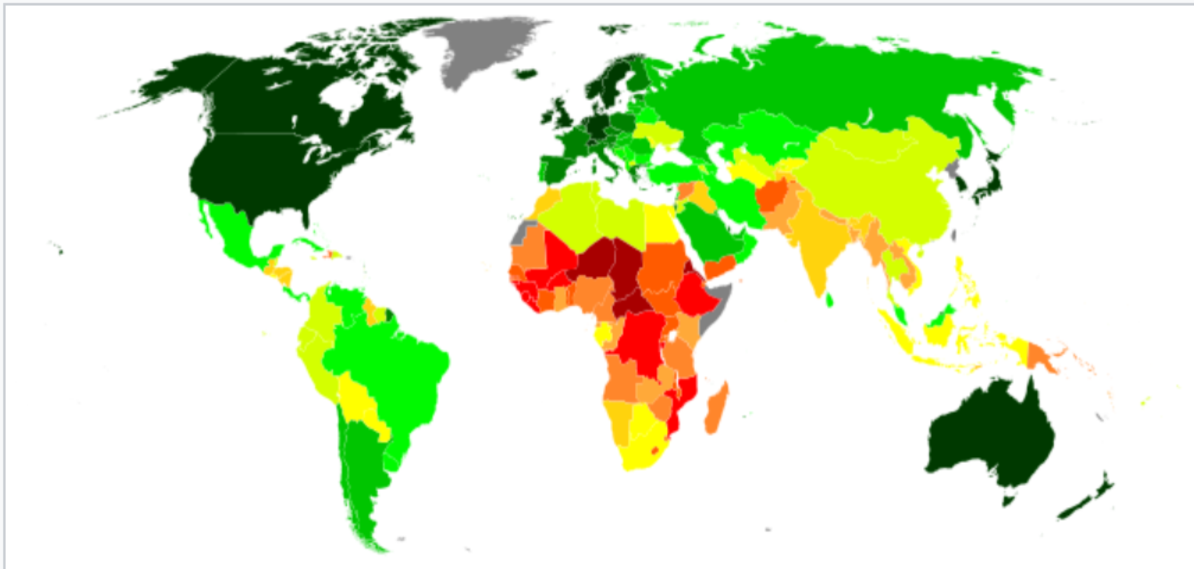
- Emerging market economies also called developing countries, less developed countries, or underdeveloped counties, are nations characterized by relatively low economic wealth per capita and low scores on the Human Development Index (HDI)
  - The HDI is a composite statistic of life expectancy, education, and per capita income. The Index uses a combination of these indicators to rank countries into four tiers of human development

- While there is no universally agreed-upon criteria for what makes a country emerging versus developed (and which countries fit these two categories) general reference points such as GDP per capita and HDI have been used to draw relatively arbitrary distinctions

- Emerging market countries tend to be concentrated in Asia, Latin America, Eastern Europe, Africa, and the Middle East

Emerging Market Debt – Introduction

- The Emerging market economies tend to be those in the light green and yellow shaded countries



World map indicating the **Human Development Index** (based on 2015 and 2016 data, published on 21 March 2017).

- 0.900+
- 0.850–0.899
- 0.800–0.849
- 0.750–0.799
- 0.700–0.749
- 0.650–0.699
- 0.600–0.649
- 0.550–0.599
- 0.500–0.549
- 0.450–0.499
- 0.400–0.449
- 0.350–0.399 and under
- Data unavailable

Source: Wikipedia

Emerging Market Debt – Introduction

- Emerging market countries are, by definition, less wealthy and thus often lack excess savings (wealth) to fund spending and investment
  - As a result, emerging markets must turn to international sources of capital

- Prior to the 1980s, international lending institutions (multinational banks) were the primary source of funds for emerging markets

- However, in the 1980s a fortuitous fluke of history paved the way for emerging market economies to gain access to the global capital markets
  - Following a rash of emerging market defaults, largely by Latin American countries, US Treasury Secretary Nicholas Brady developed a novel debt-restructuring plan designed to alleviate the severe losses faced by US multinational banks on their loans to emerging market economies
  - The debt-restructuring plan allowed the banks to convert their loans into tradable instruments
  - Despite the large haircut the banks had to take on their loans the exchange process created a mechanism for the banks to offload their exposure by selling the newly created securities, eponymously named Brady bonds, on the global capital markets

Emerging Market Debt – Introduction

- This serendipitous event essentially created a backdoor mechanism for emerging market economies to gain direct access to the global capital markets. Resulting in:
  - A significant expansion and diversification in the source of funds for emerging markets
  - A marked increase in foreign ownership of emerging market bonds and increasing integration with global markets

- Integration has created a virtuous cycle for many emerging economies, wherein greater access to capital has led to increased investment, resulting in increased productivity and ultimately growth
  - At the same time, the markets have imparted discipline on emerging countries' fiscal and monetary policies through rewarding virtuous policies and punishing harmful ones (i.e. raise/lower interest rates and access to capital dependent on quality of fiscal and monetary policy)
  - The virtuous cycle is further driven by the fact that positive changes in fiscal and monetary policy beget increased investor confidence and improvement in credit ratings which drives further investment and growth

Emerging Market Debt – Introduction

Too Much of a Good Thing

- This increased access to attractively priced capital (cheap money) led many emerging countries to overborrowing and malinvestment (inefficient allocation of resources)

- This was often followed by defaults or restructurings triggered by at least one of the following factors:
  1. A deterioration of the trade balance of the emerging country;
  2. Higher interest rates arising in the creditor nations. Usually resulting from an economic slowdown, monetary policy or market sentiment, and/or;
  3. Contagion. A crisis in a different major emerging country, transmitted internationally through financial and trade linkages.

Emerging Market Debt – Introduction

- The chart below highlights sovereign bond defaults that have occurred over the past 20 years
  - The chart only includes defaults on sovereign bonds and is not inclusive of other forms of default such as on bank loans or official creditors (e.g. other countries, IMF)

Year	Country	Defaulted Debt ($ Millions)
1998	Venezuela	270
1998	Russia	72,709
1998	Ukraine	1,271
1999	Pakistan	1,627
1999	Ecuador	6,604
2000	Ukraine	1,064
2001	Argentina	82,268
2002	Moldova	145
2003	Uruguay	5,744
2003	Nicaragua	320
2005	Dom. Rep.	1,622

Year	Country	Defaulted Debt ($ Millions)
2006	Belize	242
2008	Nicaragua	296
2008	Ecuador	3,210
2010	Jamaica	7,900
2012	Belize	5,447
2012	Greece	42,076
2013	Jamaica	9,100
2013	Cyprus	1,311
2014	Argentina	29,429
2015	Ukraine	13,280
2016	Mozambique	698

Source: Moody's

Section 2: Emerging Market Debt – Types

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Emerging Market Debt – Types

- Emerging market debt can be separated into three broad categories based on currency (foreign or local) and issuer (sovereign or corporate)
  1. Foreign Currency Sovereign Debt
  2. Local Currency Sovereign Debt
  3. EM Corporate Debt

1. Foreign Currency Sovereign Debt – Debt issued by emerging market Governments in US Dollars or other major developed nation currency (Euro, Pound, Yen) – Also know as "hard" currency bonds – Represented by the J.P. Morgan Emerging Markets Bond Index Global (EMBIG)
   - Benefits:
     - Most liquid and stable of the three debt types
     - Eliminates currency fluctuations – EM currencies can be volatile, increasing portfolio volatility
     - Eliminate inflation risk – EM countries have been prone to periods of high inflation
   - Drawbacks:
     - Historically, lowest yielding option
     - Reduced issuance by highest quality borrowers
     - Increases risk for issuing country – greater likelihood issuing country will fail to pay
       - Mismatch of assets and liabilities
       - Foreign currency reserve issues

Emerging Market Debt – Types

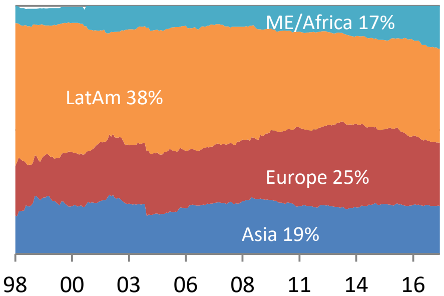
2. Local Currency Sovereign Debt – Debt issued by emerging market Governments in their own (domestic) currency – Represented by the J.P. Morgan GBI-EM Index (GBI-EMG)
   - Benefits:
     - Higher yielding than hard currency bonds
     - Broadens investment opportunity set
     - Potential benefit from currency diversification – monetary policy diversification
     - Offers flexibility to issuing country – reduced risks associated with issue debt in hard currencies
     - Countries issuing local currency bonds tend to have more advanced capital markets in order to facilitate local bond issuance
   - Drawbacks:
     - Increased volatility – EM currencies can be volatile potentially greatly increasing the overall volatility of the investment
     - Capital controls – taxes; limits on movement of capital
     - Currency and inflation risks – many EM countries have suffered from high levels of inflation which devalues their currency – a bond may pay out in full but the purchasing power may be greatly reduced
     - Less desirable during a crisis – will likely suffer larger losses

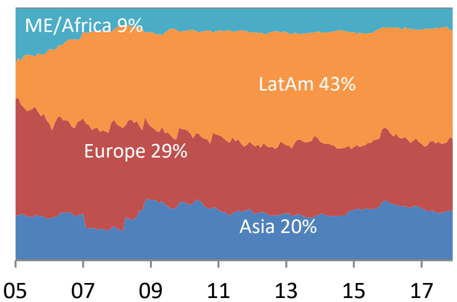
Emerging Market Debt – Types

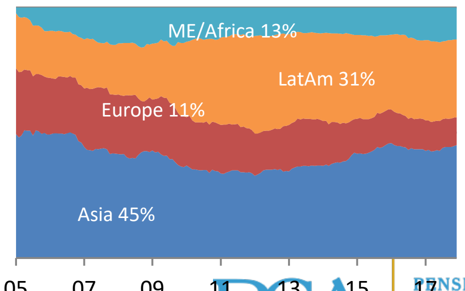
3. EM Corporate Debt – Debt issued by corporations domiciled in emerging market countries typically in foreign currency – Represented by the J.P. Morgan CEMBI (CEMBIB)
   - Benefits:
     - Higher yielding than sovereign bonds
     - Broadens investment opportunity set
     - Eliminates currency fluctuations with hard currency bonds
     - Some corporations may be more credit worthy than certain sovereigns
     - Increased diversification potential
   - Drawbacks:
     - Increased volatility
     - Company specific risks – credit risk is amplified being in an EM country
     - Legal and governance risk – weak property rights and uncertain debt recovery processes
     - Asset liability mismatch as majority of corporate bonds are issued in hard currencies
     - Will likely suffer the largest losses during a crisis

Emerging Market Debt – Types

	EM Sovereign Hard Currency Debt	EM Sovereign Local Currency Debt	EM Corporate Debt
Description	Debt issued by an EM government ("sovereign") and denominated in an external ("hard") currency (e.g., US dollar, euro, British pound sterling)	Debt issued by an EM government ("sovereign") and denominated in the local currency (e.g. South African rand, Brazilian real)	Debt issued by companies in EM domiciles; predominately issued in external ("hard") currency
Key Features	Most liquid Lowest short-term volatility	Less liquid and more volatile than EM sovereign hard currency Higher yield than hard currency debt	Least liquid High historical volatility
Risks	Political and economic ("sovereign credit") risks	Sovereign credit risks including potential currency controls or changes in tax status Foreign exchange rate risk	Corporate credit and structural risks (including deal structure, covenants and legal framework) Sovereign credit risk
Performance Drivers	Stability and success of the issuing country's political and economic policies	Stability and success of the issuing country's political and economic policies Currency and interest rate movements	Company specific factors Stability and success of the political and economic policies of the company's domicile
Credit Quality	BB+	BBB	BBB-
Mkt Value ($B)	922	1,284	976
Duration (Yrs)	7.03	4.85	4.95
Yield	5.64%	6.44%	5.35%
Securities	651	219	1,354







Source: RBC, JP Morgan

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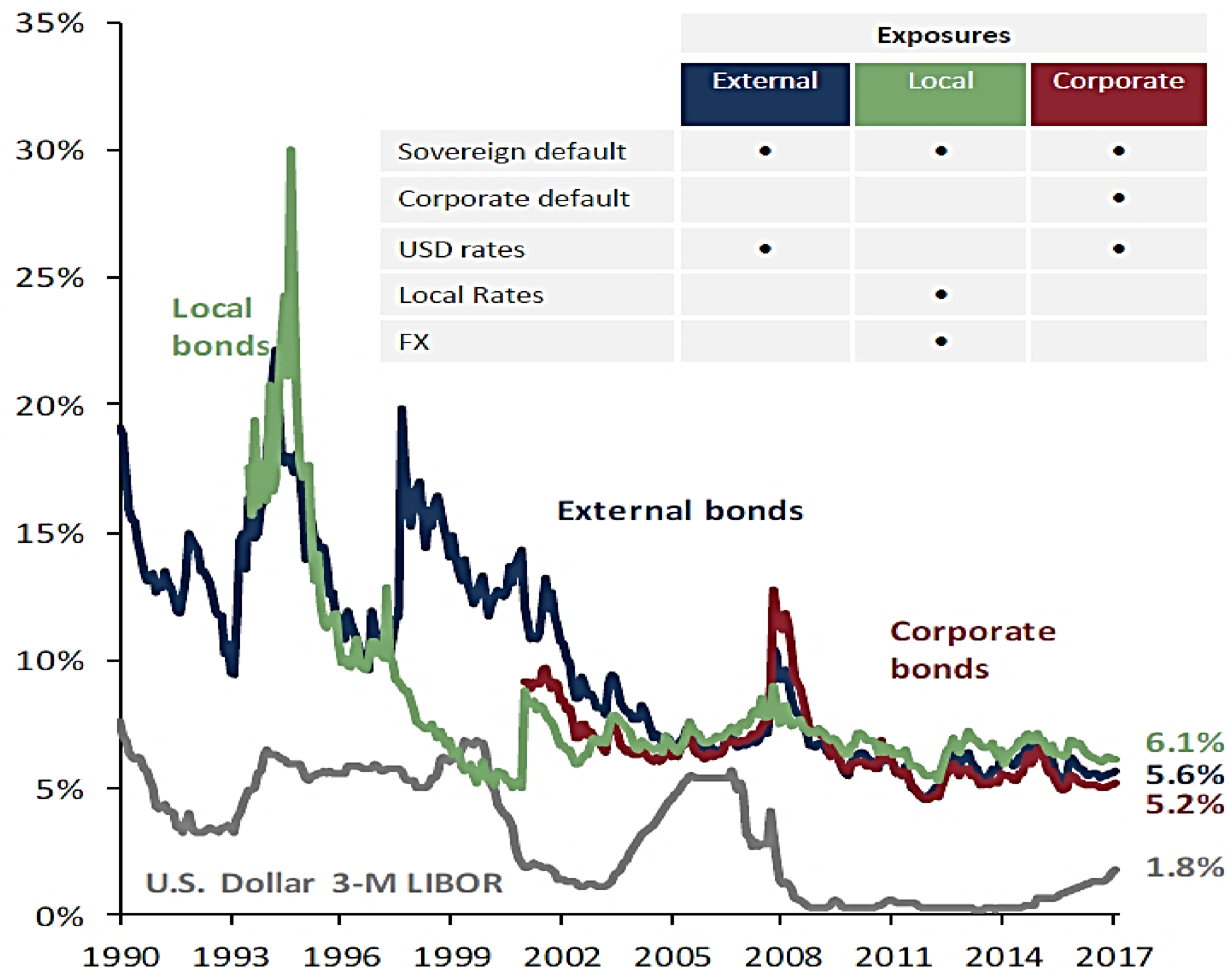
Emerging Market Debt – Types

- The yields on all types of emerging market debt have decreased over time

Yields on Emerging Debt



	Exposures		
	External	Local	Corporate
Sovereign default	•	•	•
Corporate default			•
USD rates	•		•
Local Rates		•	
FX		•	

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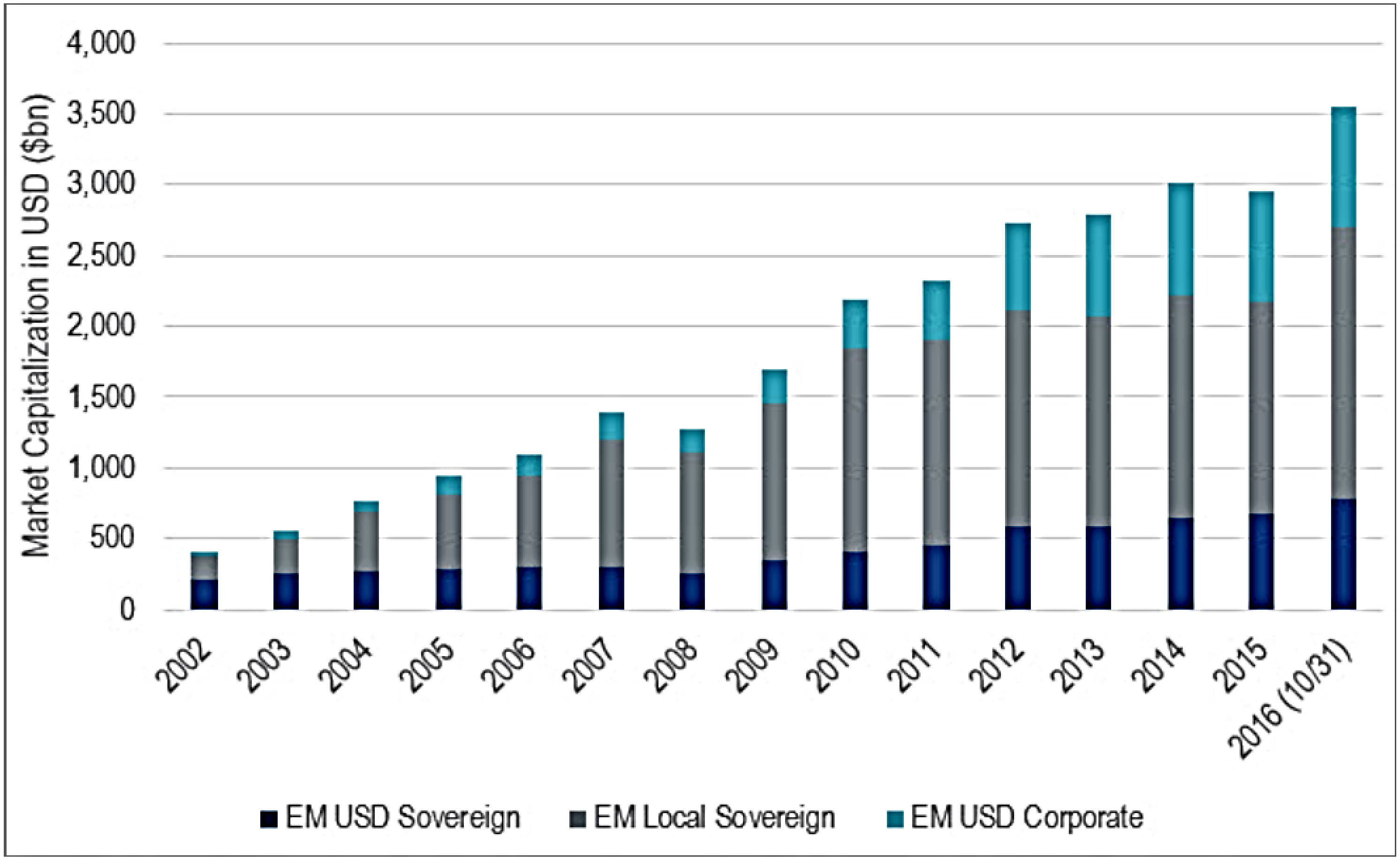
Emerging Market Debt – Types

The Emerging Markets Debt Asset Class Has Grown in Size and Diversity

2002-2016



Source: J.P. Morgan as of 10/31/2016. EM USD Sovereign represented by J.P. Morgan EMBI Global Index. EM Local Sovereign represented by J.P. Morgan GBI-EM Broad Index. EM USD Corporate represented by J.P. Morgan CEMBI Broad Index. Past performance is not indicative of future results; current data may differ from data quoted.

Section 3: Emerging Market Debt – Rationale

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Emerging Market Debt – Rationale

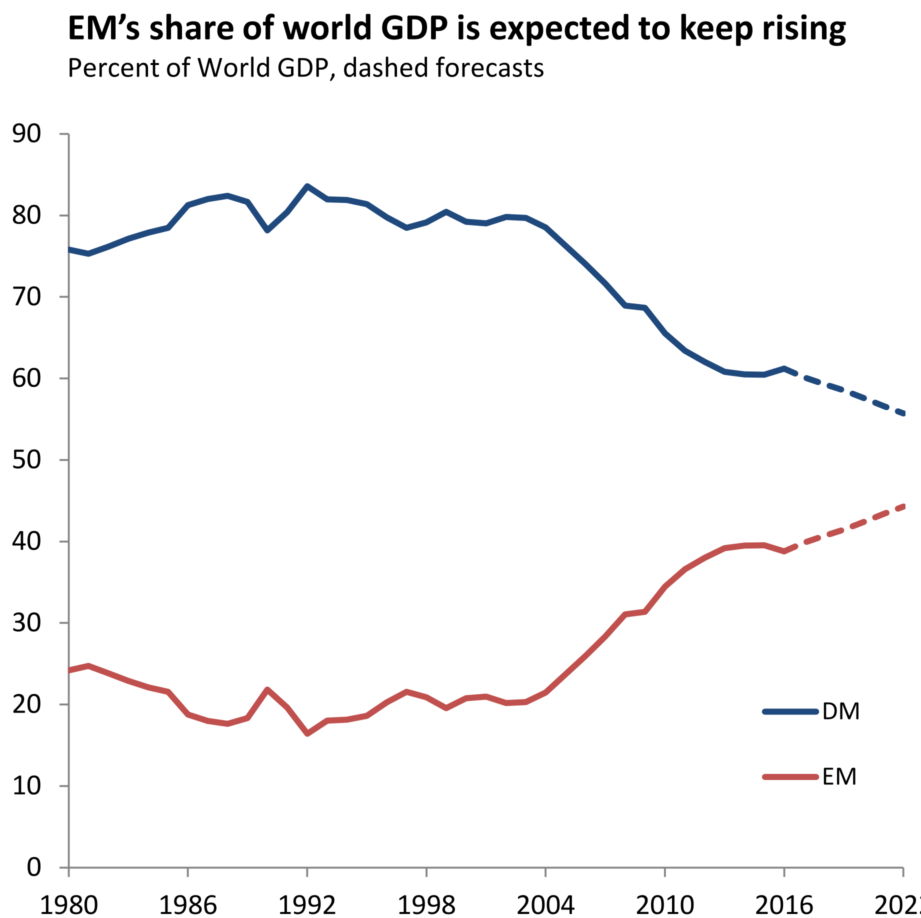
- Emerging market economies today account for approximately 40% of Global GDP and their aggregate growth rate remains significantly higher than that for advanced economies

- Economists near-unanimously agree that emerging economies possess a greater inherent capacity for economic growth than developed countries

- This postulation is based on 3 key tenets:
    1. Lower Base – Emerging market economies are starting at a lower base (i.e. compounding effect),
    2. Demographics – Demographic trends strongly favor emerging markets. According to the IMF 80% of the word's population and greater than 90% of the world's aged 30 and below population live in emerging markets, and
    3. Technological Leapfrogging – Emerging economies have the advantage of being able to move themselves forward rapidly through the adoption of modern technology without going through intermediary steps

Emerging Market Debt – Rationale

- Emerging markets have demonstrated strong economic growth and will likely become half of the global economy in this half of the century

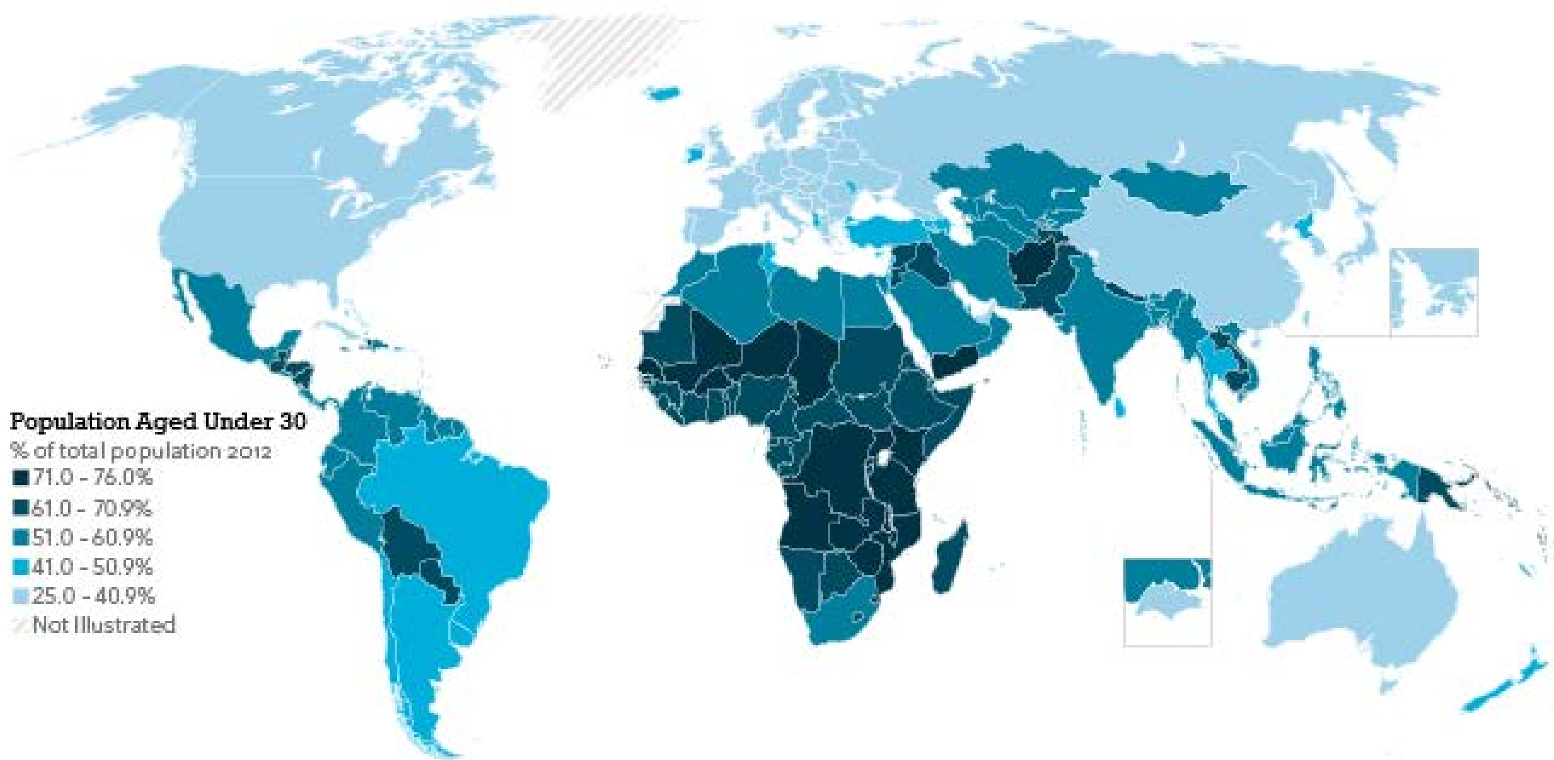


Source: JP Morgan

Emerging Market Debt – Rationale

- Demographics support emerging markets growth – 90% of the world population under the age of 30 is concentrated in emerging countries

- Between 2015 and 2050, economists estimate the world's population will grow by one-third (to 9.3 billion people) with emerging market economies accounting for 99% of the increase

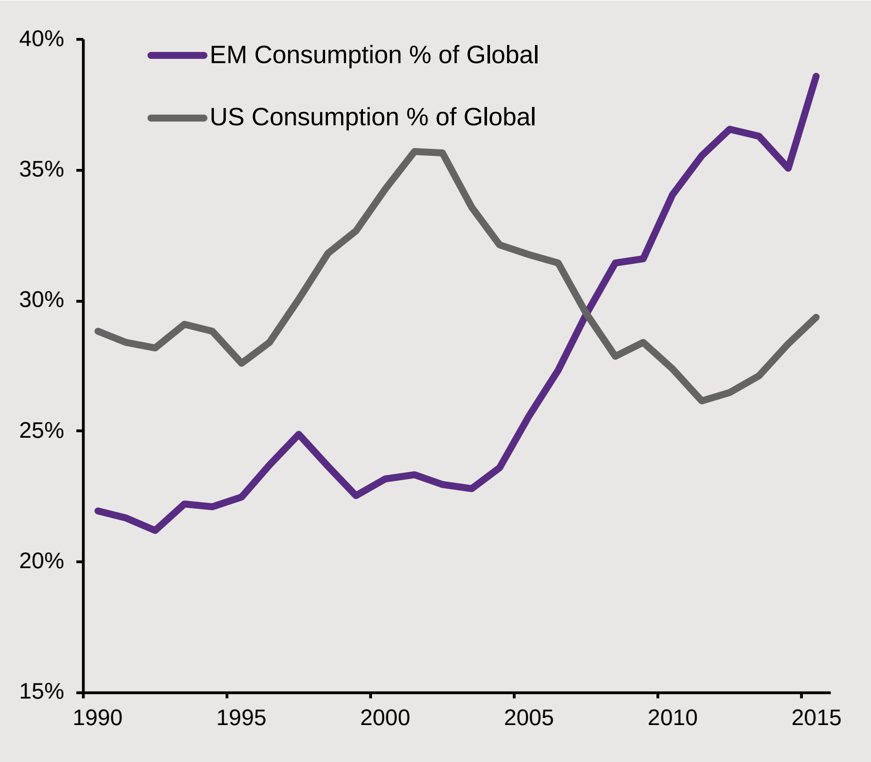


Source: Euromonitor International

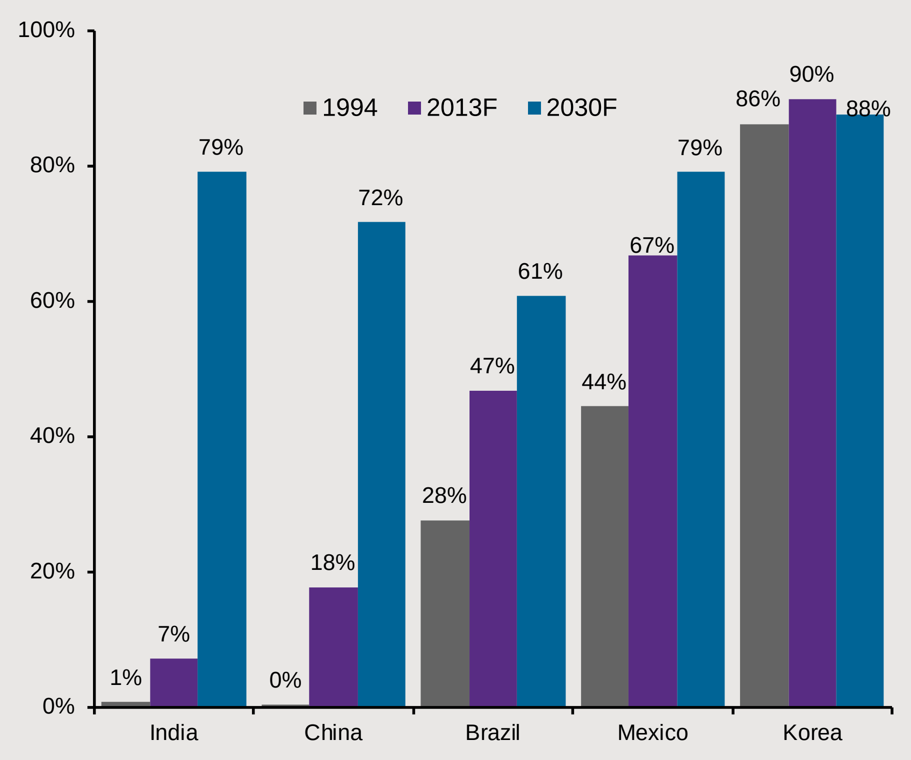
Emerging Market Debt – Rationale

- Emerging markets' growth will also be supported by a growing middle class and rising consumption

Share of Global Nominal Consumption
Current dollar household expenditures, (1990-2015)*



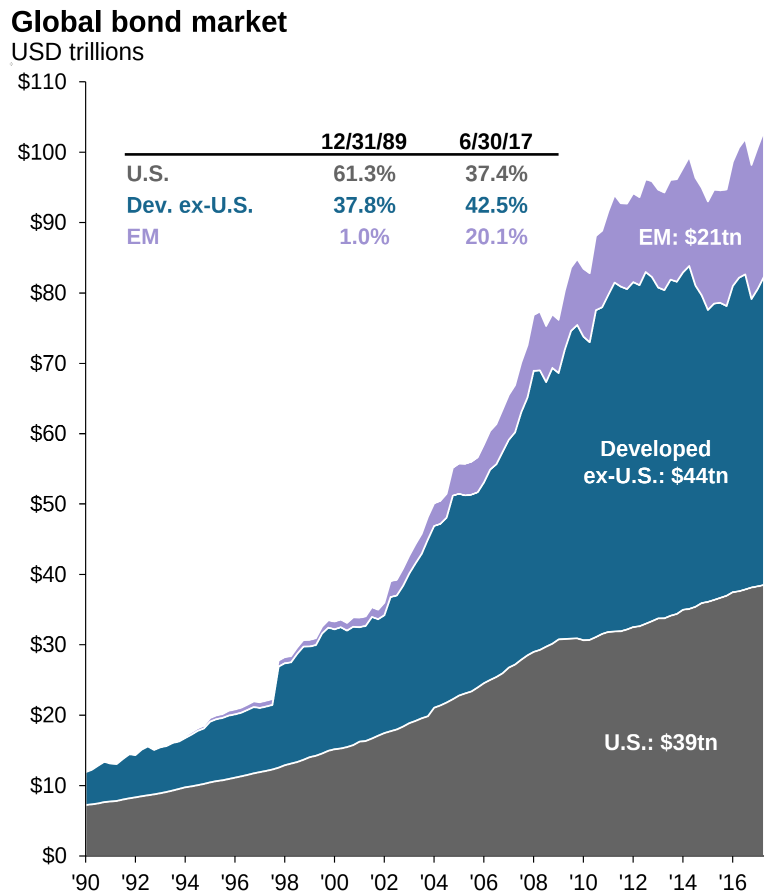
Stronger demographics bode well for long-term EM growth
Growth of the Middle Class



Global Consumption Source: 1Q2017 J.P. Morgan Guide to the Markets, UN, World Bank. As of Dec 2015. LHS: 1Q2017 J.P. Morgan Guide to the Markets, UN, World Bank. Middle class is defined as $3,600 – $36,000 annual per capita income in purchasing power parity terms. Historical and forecast figures come from the Brookings Development, Aid, and Governance Indicators. The charts and/or graphs shown above and throughout the presentation are for illustrative and discussion purposes only. Opinions and statements of financial market trends that are based on current market conditions constitute our judgment and are subject to change without notice. We believe the information provided here is reliable but should not be assumed to be accurate or complete. The views and strategies described may not be suitable for all investors.

Emerging Market Debt – Rationale

- In addition to strong growth and demographic fundamentals, emerging market economies are becoming an increasingly large segment of the global bond market



Source: JP Morgan

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Emerging Market Debt – Rationale

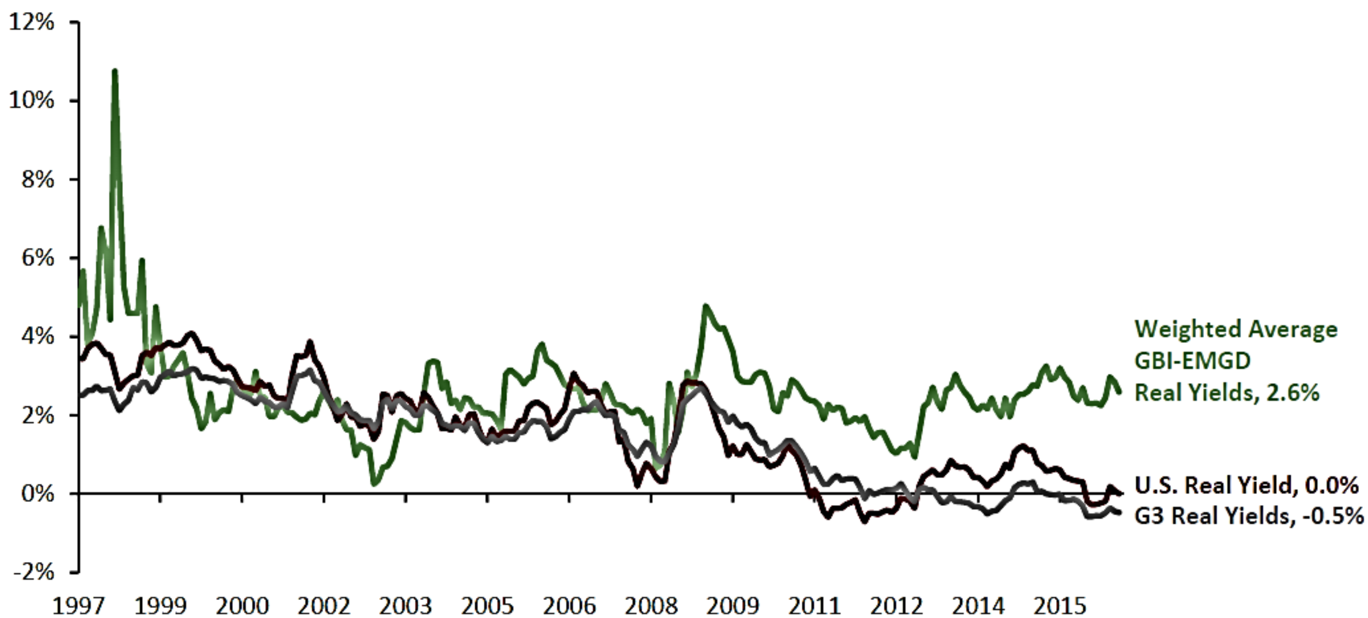
- Emerging markets offer higher yields than developed market bonds with lower interest rate risk (duration)

	Yield		2017 Return			
Aggregates	**12/31/2017**	**9/30/2017**	**Local**	**USD**	**Duration**	**Correl to 10-year**
U.S.	2.71%	2.55%	3.54%	3.54%	6.0 years	0.85
Gbl. ex-U.S.	1.03%	1.05%	-	9.80%	7.6	0.38
Japan	0.20%	0.21%	0.20%	3.74%	9.1	0.51
Germany	0.46%	0.42%	-1.57%	12.06%	6.2	0.24
UK	1.49%	1.59%	2.19%	11.88%	10.1	0.16
Italy	1.25%	1.27%	0.90%	14.88%	6.6	0.08
Spain	0.90%	0.89%	1.23%	15.25%	6.6	0.11
Sector						
Euro Corp.	0.75%	0.78%	2.41%	16.59%	5.2 years	0.17
Euro HY	3.32%	3.28%	6.24%	20.95%	4.4	-0.36
EMD ($)	5.26%	5.19%	-	10.26%	6.8	0.23
EMD (LCL)	6.14%	5.99%	8.91%	15.21%	5.1	0.12
EM Corp.	4.53%	4.43%	-	7.96%	5.8	-0.21

Source: JP Morgan

Emerging Market Debt – Rationale

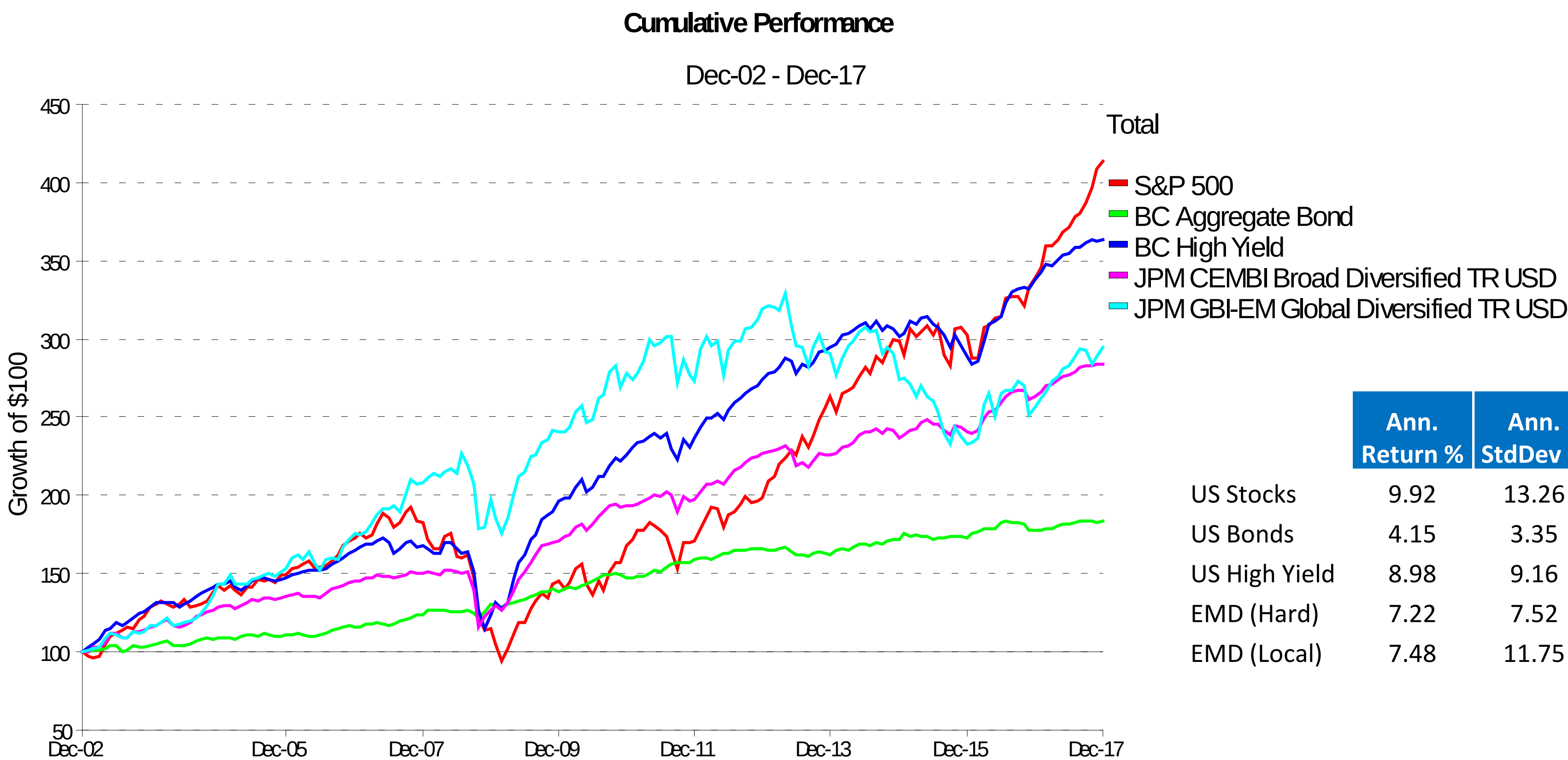
- While real yields in developed markets have trended lower and have remained near zero or below, emerging market real yields have remained positive



As of 1/31/17
Source: GMO
Note: Real yields are measured using the country sub-indices of the GBI-EMD and GBI Global, respectively, less Consensus Forecast CPI.

Emerging Market Debt – Rationale

- Historically, emerging market returns have been compelling
  - Considerably higher than US investment grade bonds (BC Aggregate) but below that of US stocks (S&P 500)
  - Hard currency bonds (JPM CEMBI) and local currency bonds (JMP GBI-EM) have produced results in line with US High Yield bonds (BC High Yield)



	Ann. Return %	Ann. StdDev %	Sharpe Ratio
US Stocks	9.92	13.26	0.69
US Bonds	4.15	3.35	0.85
US High Yield	8.98	9.16	0.85
EMD (Hard)	7.22	7.52	0.80
EMD (Local)	7.48	11.75	0.57

Source: MPI

Emerging Market Debt – Rationale

- Emerging market debt also offers a modest diversification benefit due to their relatively low correlation to other asset classes

	J.P. Morgan EMBI Global Index	J.P. Morgan GBI-EM Global Diversified Index	J.P. Morgan CEMBI Broad Diversified Index
U.S. Treasuries	0.22	0.17	0.21
Gold	0.37	0.44	0.38
Diversified Commodities	0.41	0.50	0.43
Non-U.S. Fixed Income	0.43	0.58	0.38
Real Estate	0.53	0.59	0.51
U.S. Aggregate Bonds	0.56	0.41	0.57
U.S. TIPS (Inflation)	0.58	0.48	0.63
U.S. Stocks	0.54	0.61	0.49
Developed Foreign Stocks	0.62	0.74	0.59
Emerging Markets Stocks	0.66	0.79	0.62
U.S. Corporate High Yield	0.72	0.64	0.74
J.P. Morgan EMBI Global Index		0.80	0.86
J.P. Morgan GBI-EM Global Diversified Index			0.71
J.P. Morgan CEMBI Broad Diversified Index			

0.8 - 1.0 **0.6 - 0.8** **0.4 - 0.6** **0.2 - 0.4** **< 0.2**

Source: Bloomberg, J.P. Morgan Asset Management. Monthly correlation since 01/01/2002. *Shown for illustrative purposes.* Developed foreign stocks represented by MSCI EAFE Index. U.S. stocks represented by S&P 500 Index. Emerging markets stocks represented by MSCI Emerging Markets Index. Diversified commodities represented by DJ UBS Commodities Index. Real estate represented by FTSE NAREIT Equity REIT Index. Non-US fixed income represented by JPM GBI Global ex-US Unhedged in USD. Gold represented by S&P Goldman Sachs Commodity Index – Gold. U.S. corporate high yield represented by Barclays U.S. Corporate High Yield Index. U.S. TIPS (inflation) represented by Barclays Capital U.S. TIPS Index. U.S. aggregate bonds represented by Barclays Capital U.S. Aggregate Bond Index. U.S. Treasuries represented by Barclays Capital Intermediate Treasury Index.

Section 4: Emerging Market Debt – Risks

"More money has been lost reaching for yield than at the point of a gun"
- Raymond DeVoe, Jr.

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Emerging Market Debt – Risks

Headline Risk / Participant Discomfort

- Investing in emerging market debt entails lending money to countries that are not always considered friendly to the US and at times can be seen as hostile to American interests
  - Russia, China, Egypt, Nigeria, Pakistan, to name just a few

- Since TFI is recommending the allocation be added to the Age-based options participants will be unable to "de-select" from the allocation
  - As a Board you will be unilaterally allocating participants' assets to these countries and their governments

- The Program already has emerging market exposure but that comes in the form of ownership stakes in companies domiciled in emerging market countries – emerging market debt, however, comes as direct loans to foreign governments
  - Governments that have in the past used such moneys to:
    - Oppose US interests
    - Oppress their own people
    - Wage war and harbor terrorists
    - Enable rampant corruption

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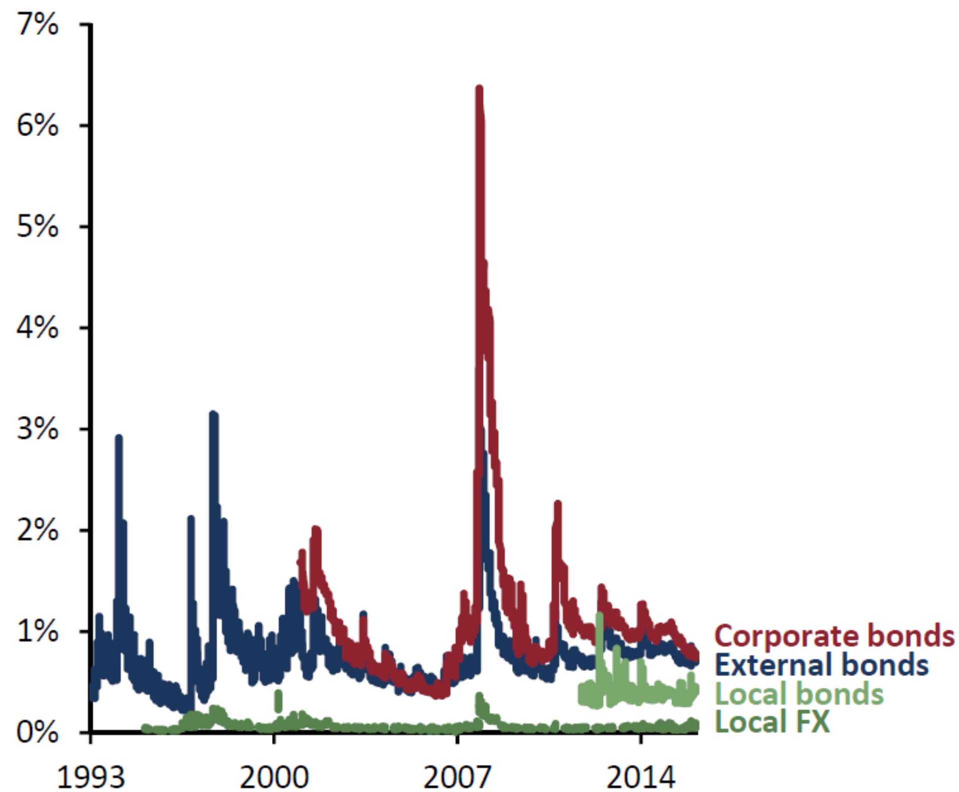
Emerging Market Debt – Risks

Liquidity Risk

- Emerging market bonds are less liquid than developed market bonds – EM bond markets can become very illiquid in times of stress

Bid-Offer Spreads



Emerging Market Debt – Risks

Contagion

- Contagion – refers to the spread of market disturbances from one country to others – observed through co-movements in exchange rates, stock prices, sovereign spreads, and capital flows
- Contagion leads to co-movements in capital flows and asset prices – so that a crisis in one country or segment of the market spills over onto others
- Contagion is a large risk to emerging markets due to the risk of capital flight and reliance on foreign borrowings
- The idea of contagion in financial markets arose out of the 1997 currency crisis in Thailand which quickly spread throughout East Asia and then on to Russia and Brazil
  - The collapse of the Thai baht spread to Indonesia, the Philippines, Malaysia, South Korea and Hong Kong in less than 2 months

Emerging Market Debt – Risks

Sovereign Risk

- Sovereign risk – The risk that the borrowing government implements some form of regulatory or policy change that is damaging to the lender
- Sovereign risk often takes the form of capital controls
- Capital controls – measures such as transaction taxes, limits, or outright prohibitions that a nation's government use to regulate flows into and out of the country's capital markets
- Recent examples include:

Country	Recent Measures
Brazil	Increase in tax on fixed income-investments to 6% in October 2010
Indonesia	Minimum holding period of one month on foreign holdings of Central Bank bills
Peru	Reinstated 4% fee on Bank CDs
South Korea	Limitations on short-term borrowings by commercial banks. Caps on foreign banks FX forward positions announced June 2010
Taiwan	Proposed mandatory use of USD for foreigners' equity margin accounts
Thailand	Reintroduced 15% withholding tax on foreign holdings of domestic bonds

Source: JP Morgan

Emerging Market Debt – Risks

Credit Risk

- Credit risk comes in two forms: 1) non-payment by the issuer (default), and 2) credit spread volatility risk
  - Credit spread volatility creates mark-to-market losses or gains, but failure to pay results in permanent loss of capital

1. Emerging market countries have been prone to defaulting on their debt (see page 10)
   - Defaults take multiple different forms:
     - Outright default – Country stops paying interest and principal on their debt
     - Debt restructurings – Renegotiate terms of the debt often involving a haircut by investors
     - Inflation – If bonds are denominated in local currency modest-to-high levels of inflation can be a form of default as the lender is repaid at substantially lower purchasing power

2. Emerging market bonds are highly susceptible to credit spread volatility
   - Credit spreads are essentially a gauge of investors' appetite for risk
   - Credit spreads reflect a combination of investors' asset specific and overall risk appetite
   - Assets with relatively high credit spreads tend to be sensitive to changes in the economy

Emerging Market Debt – Risks

Credit Risk (continued)

- Emerging market debt's credit risk has made it highly volatile over time – in line with other high yield segments of the bond market
  - This makes the question of where one sources the allocation highly important as there is the risk of increasing the overall risk of the portfolio

- This also means emerging market debt will be more sensitive to changes in the global economy similar to other risky investments like global equities
  - This reduces their diversification benefit

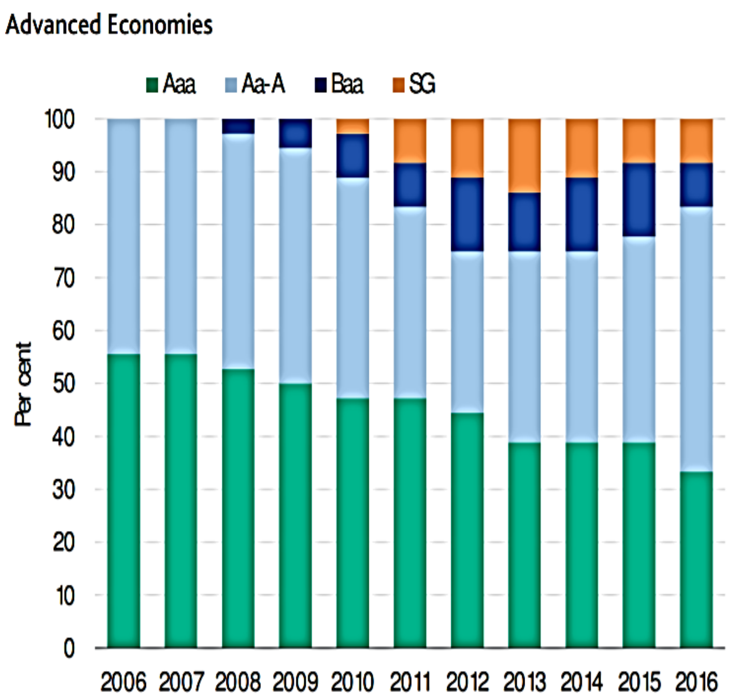
	Jan-03 - Dec-17								
	Ann. StdDev, %	Ann, Semi Stdev, %	Sortino Ratio	Worst Monthly Return, %	Worst 12 Month Return, %	Worst 24 Month Return, %	Max Drawdown Period	Max Drawdown Return, %	Max Drawdown Duration (Month)
JPM CEMBI Broad Diversified	7.52	5.59	3.17	-17.44	-23.52	-19.13	Jun-08 – Oct-08	-24.3	5
JPM GBI-EM Global Diversified	11.75	7.83	1.67	-14.07	-21.54	-21.00	May-13 - Dec-15	-29.32	32
BC Aggregate Bond	3.35	1.90	5.92	-3.36	-2.47	1.29	Apr-08 – Oct-08	-3.83	7
BC High Yield	9.16	6.08	3.46	-15.91	-31.22	-29.37	Jun-07 - Nov-08	-33.31	18

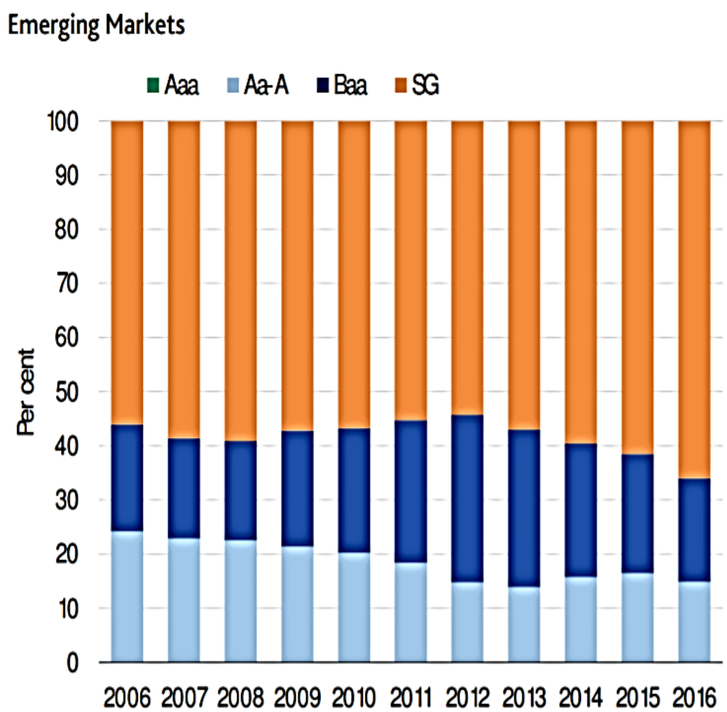
Emerging Market Debt – Risks

Current Environment

- Credit risk is actually increasing – roughly 51% of the JP Morgan EMBI Global Diversified Index was rated high yield or "junk" in 2017 – up from 34% at the end of 2013

- The overall market is even more skewed to Speculative Grade (SG) debt as can be seen in the charts below





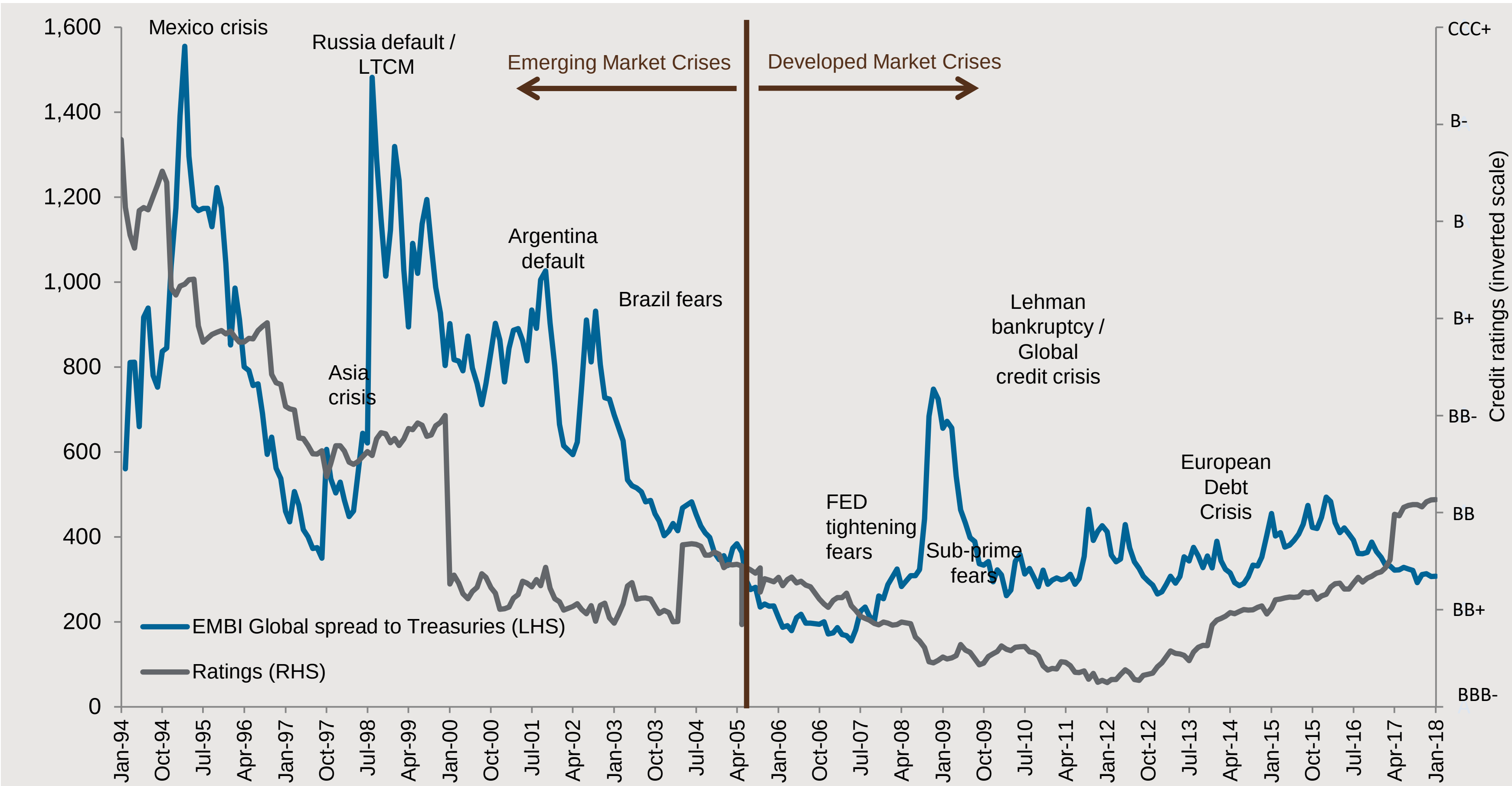
Source: Moody's

Emerging Market Debt – Risks

Current Environment

- Spreads have tightened over time, while credit quality has deteriorated over the past 5 years

EM External debt spreads and average credit ratings (inverted scale)



Source: JP Morgan

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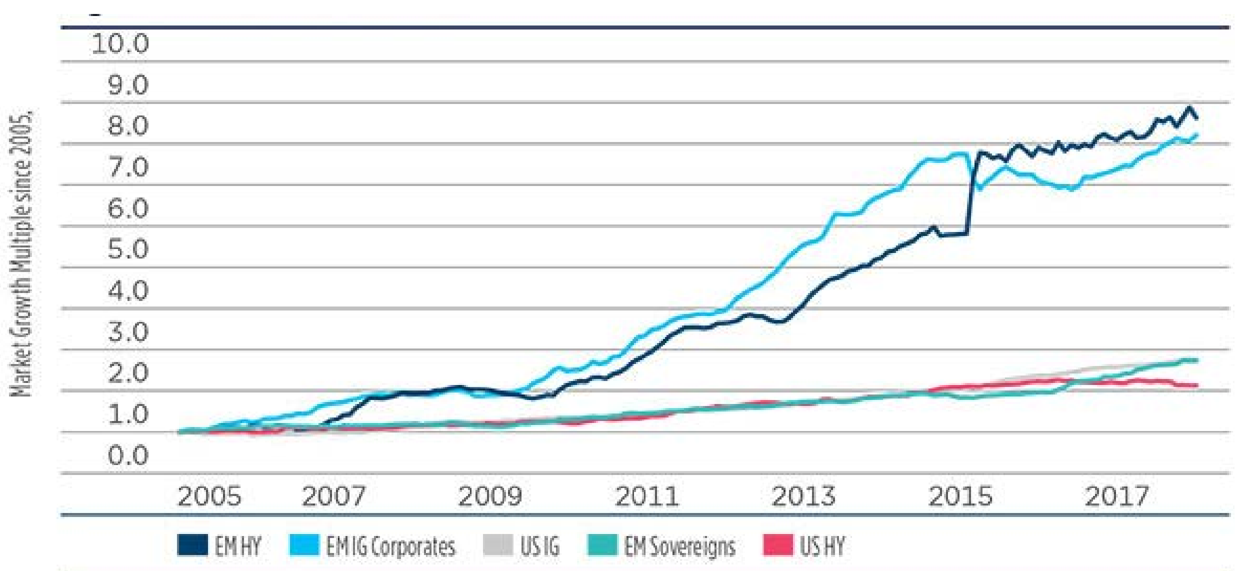
Emerging Market Debt – Risks

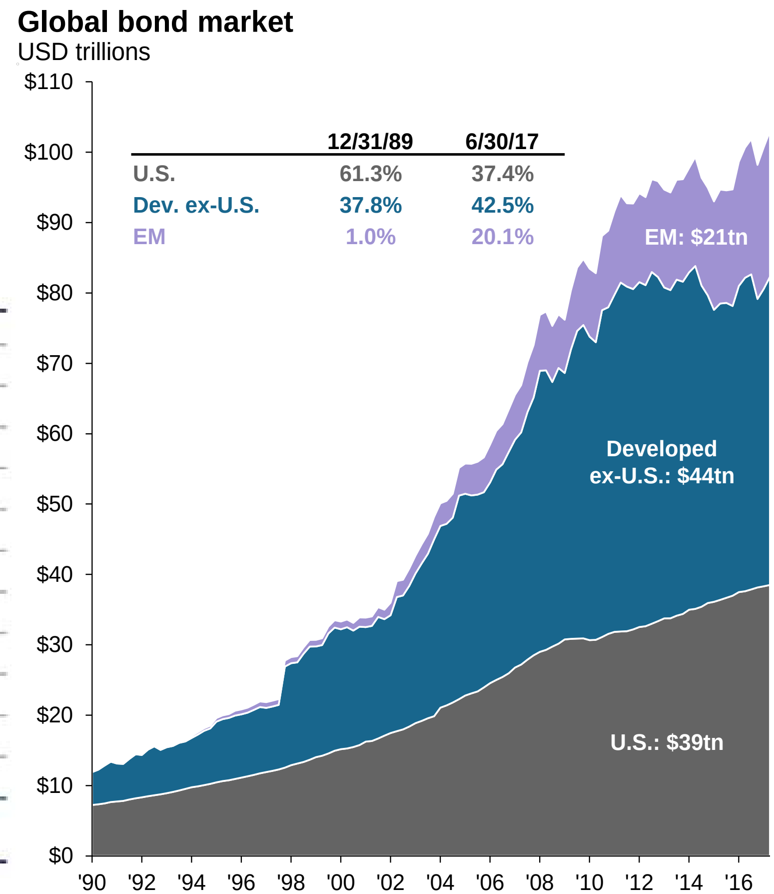
Current Environment – Surging issuance

- Investors hungry for yield have opened the window for a massive surge in emerging market borrowing

- Emerging market debt has grown at many multiples of US debt growth – concentrated in corporates and high yield



Source: BofA Merrill Lynch. Data as at December 31, 2017.



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Emerging Market Debt – Risks

Current Environment – Falling returns

- Yields for emerging markets bonds remain near all-time lows, and the yield spread versus Treasuries has been trending toward 2007 lows

- Returns will be significantly lower going forward – current yield is the best predictor of future returns for bond investments – future returns over a 5 to10 year period are likely to be no more than 5-6% (and possibly far less)
  – During the late '90s and early 2000s, EM debt offered average spreads in the 800-1000 bps range to compensate investors for a string of EM crises
  – Since the mid-2000s spreads have compressed significantly, boosting historical returns, but greatly reducing the returns available to investors on a go-forward basis
  – Spreads now sit at roughly 300 bps over Treasuries
  – 300 bps is not generous compensation for the significantly higher volatility of EM debt or for the near-certain future defaults
  – As such, potential outcomes look asymmetrically skewed to the downside given current spreads
    - That being said, ScholarShare is not in (and should not be in) the business of market timing

Section 5: Emerging Market Debt – Appendix

Appendix

Near-term risks

- A rise in developed market inflation forcing developed market central banks to tighten faster than anticipated

- Volatile commodity prices (disruptive for commodity exporters and importers)

- Uncontrolled economic slowdown in China – Debt crisis

- Rising global inflation – Synchronized interest rate tightening cycle across developed and emerging markets

- Heavy political cycle (Russia, Colombia, Mexico, Brazil) with risks to reforms and investment – Potential shift to populism

- Negative stories to watch: Turkey credit-driven growth comes to a halt, demise of NAFTA for Mexico

Appendix

Hard (EMBI Global)

Country	Weight (%)	Country	Weight (%)
Mexico	12.31	Ukraine	0.59
China	9.11	Ivory Coast	0.52
Indonesia	8.19	Serbia	0.42
Turkey	6.36	India	0.41
Argentina	5.44	Iraq	0.41
Russia	5.15	Mongolia	0.40
Brazil	4.52	Zambia	0.35
Philippines	3.25	Trin. & Tob.	0.34
Colombia	2.86	Paraguay	0.34
South Africa	2.48	Jordan	0.34
Chile	2.28	Ghana	0.34
Lebanon	2.04	Kenya	0.32
Ukraine	2.03	Guatemala	0.29
Kazakhstan	2.01	Morocco	0.26
Malaysia	1.91	Senegal	0.25
Peru	1.78	Gabon	0.25
Venezuela	1.73	Bolivia	0.23
Hungary	1.58	Honduras	0.21
Panama	1.55	Vietnam	0.20
Equador	1.52	Angola	0.19
Poland	1.51	Slovakia	0.18
Oman	1.41	Belarus	0.17
Dom. Rep.	1.35	Nambia	0.14
Uruguay	1.34	Armenia	0.12
Egypt	1.18	Georgia	0.12
Sri Lanka	1.01	Ethiopia	0.12
Croatia	0.97	Tunisia	0.11
Pakistan	0.80	Cameroon	0.10
Romania	0.72	Latvia	0.08
Azerbaijan	0.71	Mozambique	0.07
El Salvador	0.70	Suriname	0.05
Costa Rica	0.67	Tajikistan	0.05
Nigeria	0.65	Belize	0.04
Jamaica	0.64		

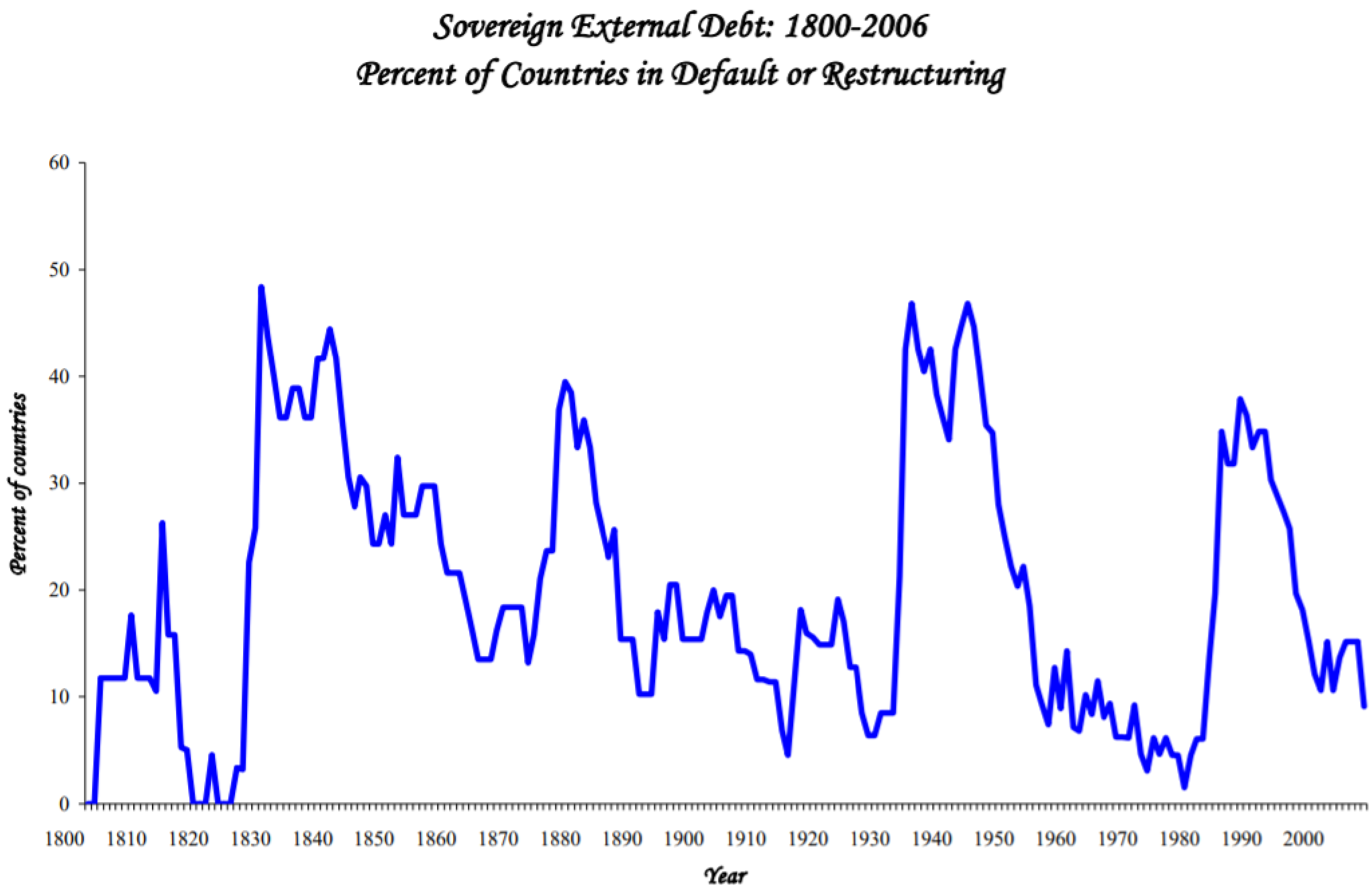
Local (GBI-EM Global)

Country	Weight (%)
Brazil	22.50
Mexico	10.90
Indonesia	9.30
Poland	9.10
South Africa	8.60
Thailand	5.90
Russia	5.70
Turkey	5.30
Colombia	5.10
Malaysia	4.30
Hungary	3.50
Czech Rep.	2.90
Romania	2.20
Peru	2.00
Chile	1.80
Argentina	0.60
Phillippines	0.20
Uruguay	0.20

Corporate (CEMBI Broad)

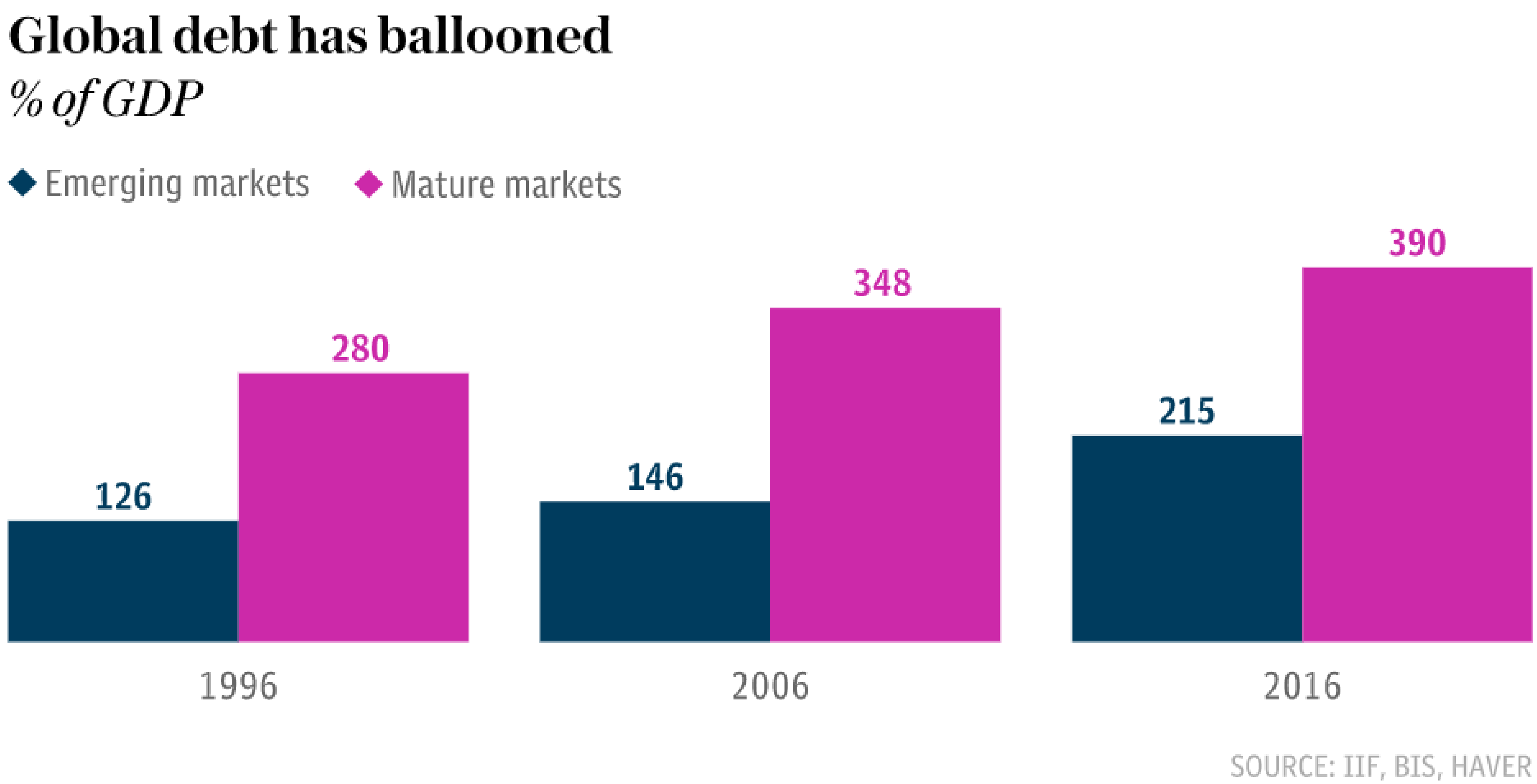
Country	Weight (%)	Country	Weight (%)
China	23.50	Panama	0.50
Brazil	14.90	Zambia	0.50
Russia	7.00	Guatemala	0.30
Hong Kong	6.90	Kazakhstan	0.30
Mexico	6.50	Morocco	0.30
India	5.00	Ukraine	0.30
UAE	3.80	Egypt	0.20
Korea	3.30	Ghana	0.20
Turkey	3.20	Taiwan	0.20
Chile	2.50	Bahrain	0.10
Colombia	2.50	El Salvador	0.10
Israel	2.40	Hungary	0.10
Singapore	1.70	Iraq	0.10
Peru	1.60	Jordan	0.10
Qatar	1.60	Oman	0.10
Argentina	1.50	Poland	0.10
South Africa	1.20	Tanzania	0.10
Thailand	1.20	Bangladesh	0.00
Indonesia	1.10	Barbados	0.00
Philippines	0.90	Czech Rep.	0.00
Kuwait	0.80	Dom. Rep.	0.00
Malaysia	0.80	Georgia	0.00
Saudi Arabia	0.80	Latvia	0.00
Nigeria	0.60	Mongolia	0.00
Jamaica	0.50	Paraguay	0.00
Macau	0.50		

Appendix



Sources: Lindert and Morton (1989), Macdonald (2003), Purcell and Kaufman (1993), Reinhart, Rogoff, and Savastano (2003), Suter (1992), and Standard and Poor's (various years).

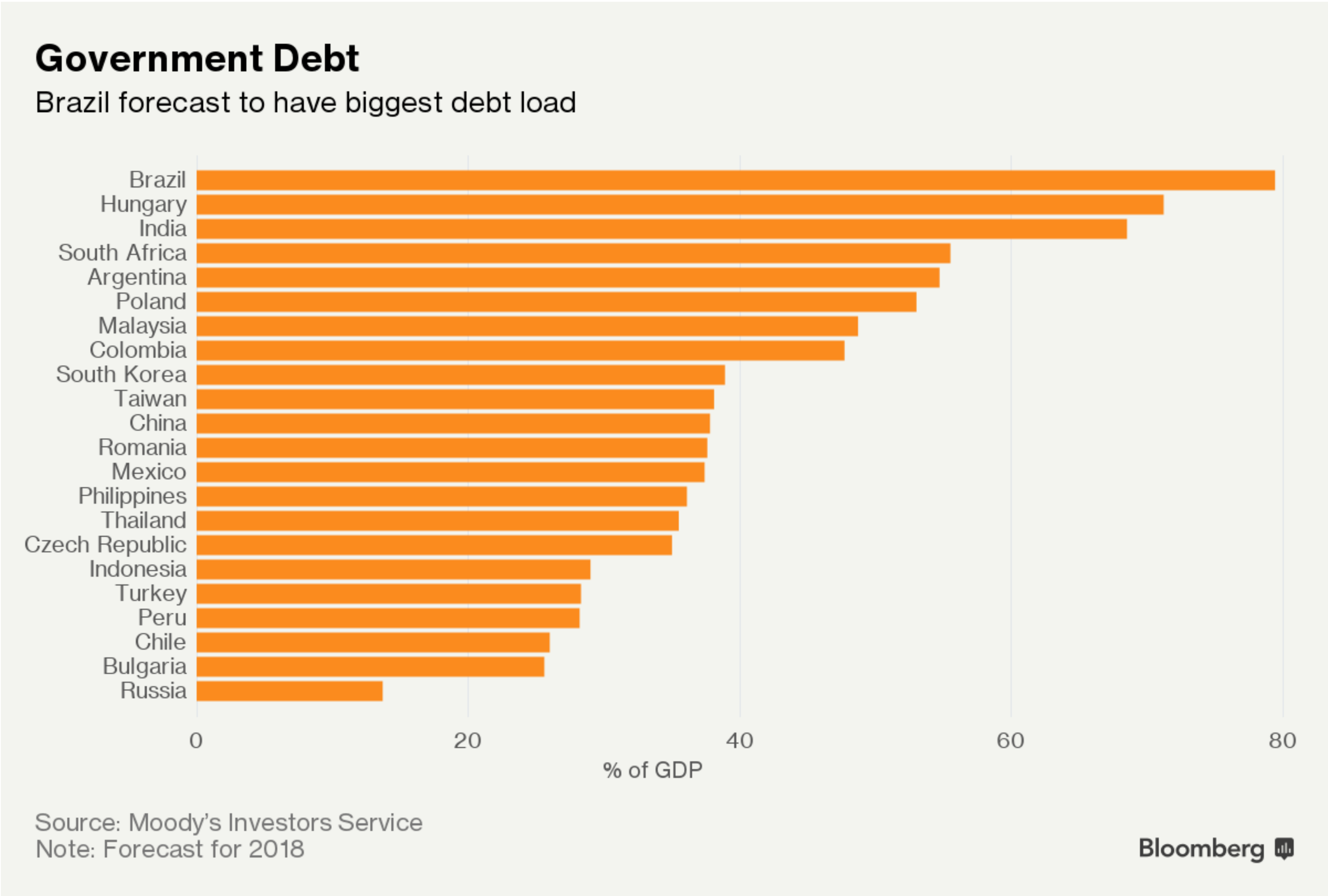
Appendix



Global debt has ballooned
% of GDP
Emerging markets
Mature markets
280
126
348
146
390
215
1996
2006
2016
SOURCE: IIF, BIS, HAVER

Appendix

- Historically EM countries have faced issues when their debt-to-GDP ratio moves into the 40-60% range

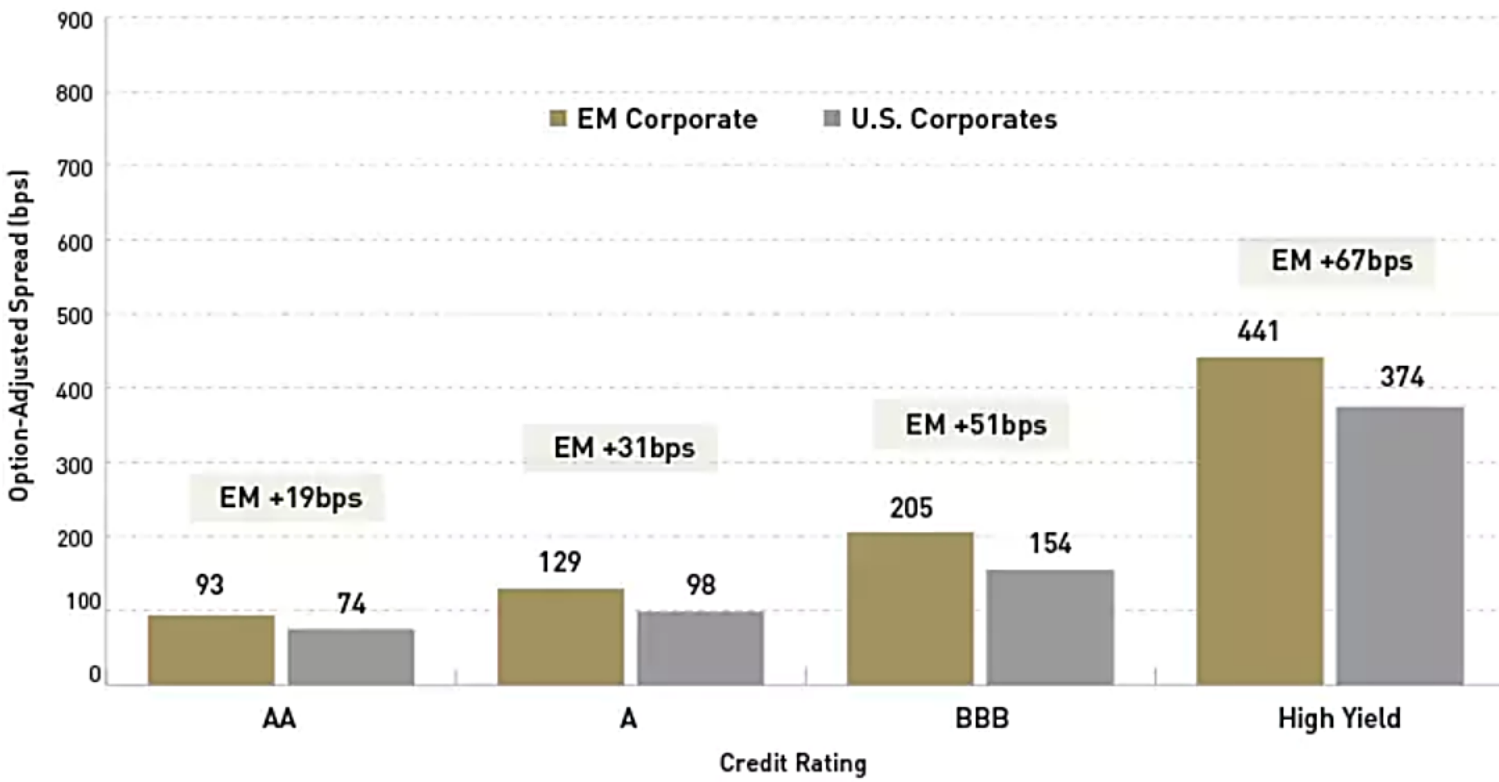


Appendix

- Spreads on EM corporate debt have narrowed relative to US corporate bonds providing relatively little premium for the greater inherent risk

Chart 1: Emerging Market Corporate Debt Has, Historically, Offered Wider Spreads Than Comparably Rated U.S. Corporate Bonds

Average spread by credit rating, as of February 28, 2017



Source: Lord Abbett

Appendix

- Emerging market currencies have been volatile over time – creates additional volatility for local currency bonds

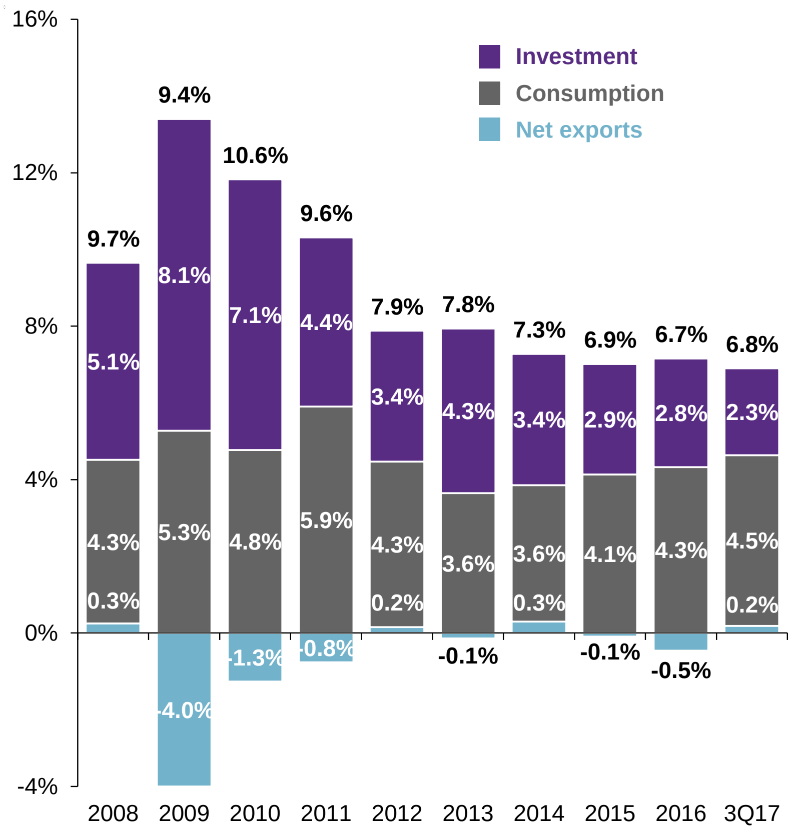
Performance of EM local currencies versus US dollar, 2003-05/02/2018

Source : BNP Paribas Asset Management, as of 02/02/2018

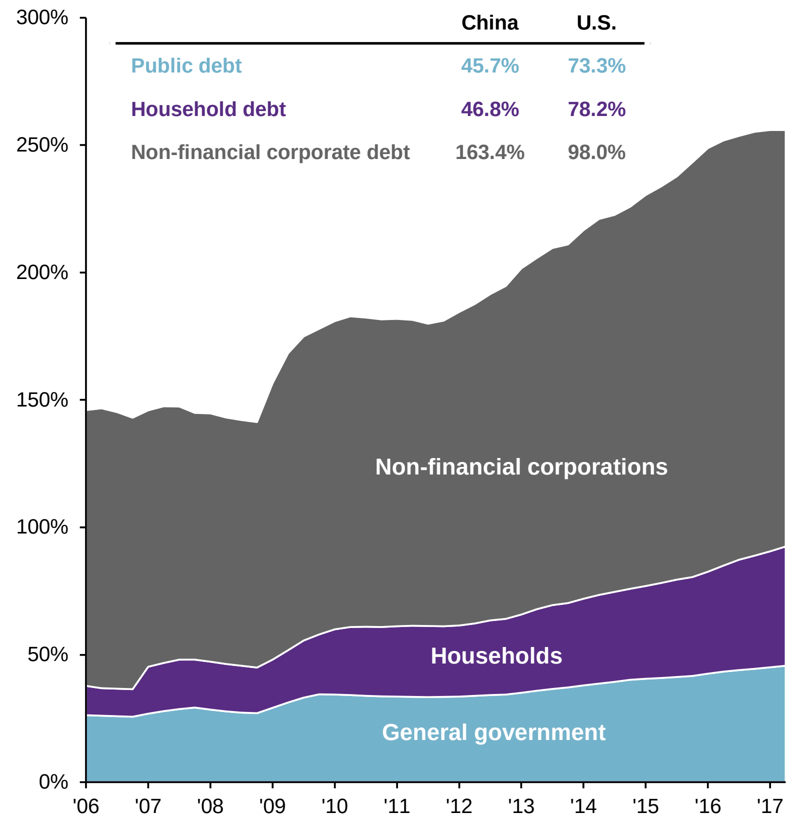
Appendix

- Chinese issuance of non-financial corporate debt has soared at the same time their economy is slowing

China real GDP contribution
Year-over-year % change



Chinese debt by sector
% of GDP, 2Q17



	China	U.S.
Public debt	45.7%	73.3%
Household debt	46.8%	78.2%
Non-financial corporate debt	163.4%	98.0%

Source: FactSet, J.P. Morgan Asset Management; (Left) CEIC; (Right) BIS.
Household and non-financial corporate debt is based on market value and government debt is based on nominal value. Public debt refers to general government debt. Past performance is not a reliable indicator of current and future results.
Guide to the Markets – U.S. Data are as of December 31, 2017.

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