Foreign ownership of EM local-currency debt: trends, indices and effects on FX and yields

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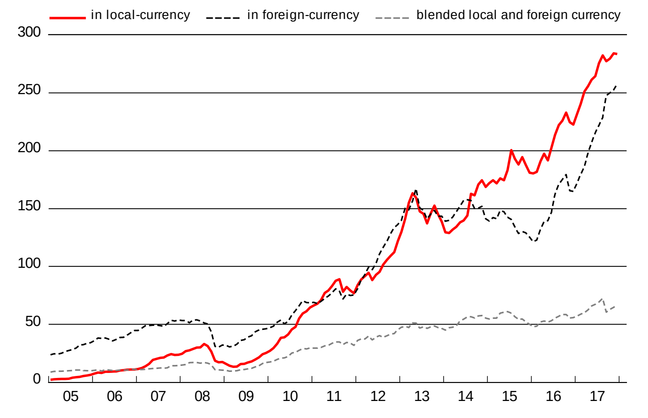
- Foreign investment in EM domestic sovereign debt has sharply increased over the last decade. This is a clear sign that EM countries have overcome the so called "original sin". We discuss the main reasons.
- Indexing has been one of the drivers of investing in local currency sovereign bonds. We discuss the major ones and their criteria for inclusion and composition.
- We analyze the effects of inclusion of a country in EM indices and of increases in foreign ownership on yields and FX. We estimate that for every 1ppt point increase in foreign ownership yields decline by about 12bp.
- We look at potential candidates for inclusion in EM indices and discuss the case of Serbia, which could be on the path to index admission in 2018.

1. Trends in allocations to local-currency sovereign debt

Investment in local-currency sovereign debt has expanded significantly over the last decade. According to EPFR, EM dedicated funds currently allocate more to bonds denominated in local currencies than to bonds denominated in foreign currencies[1]. As shown in Chart 1, the assets of EM funds with local-currency bond mandates amounted to USD 280bn at the end of 2017, compared to USD 260bn to funds with foreign-currency mandates. This is a trend that has been accelerating strongly since 2014.

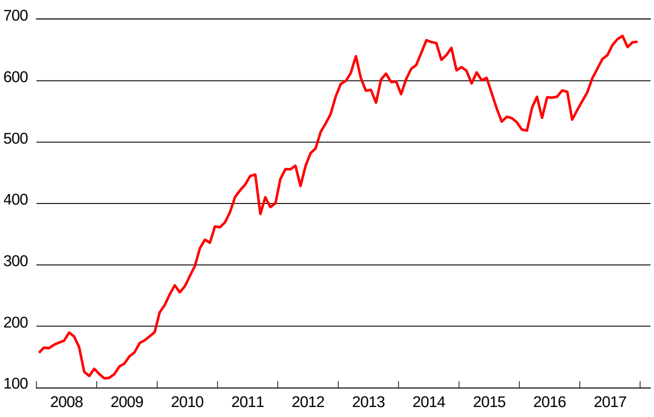
CHART 1: NET ASSETS OF EM FIXED-INCOME FUNDS (USD BN)



Source: EPFR, UniCredit Research

However, fund allocations underestimate the extent of ownership of domestic[2] debt by foreign investors. This data are not reported consistently, and several global datasets, such as debt statistics from the Bank of International Settlement, contain substantial gaps, which limit their usefulness. In order to obtain a clearer picture, we look at the national sources and aggregate the local-currency debt positions of foreign investors – investors that do not reside in the country where the investment was made – in 23 EM countries[3]. As shown in Chart 2, we estimate that foreign investors own USD 650bn in domestic local-currency debt, or more than twice the amount reportedly owned by fixed-income funds. We note that, when converted at current exchange rates, the total amount invested peaked in 2014 and at the end of 2017, foreign ownership was back at similar levels.

CHART 2: ESTIMATED EVOLUTION OF NON-RESIDENT HOLDINGS OF SOVEREIGN DOMESTIC DEBT (USD BN, EX-CHINA[4])



Source: national finance ministries and central banks, UniCredit Research

However, the conversion of local-currency amounts using current USD rates masks the extent of the growth in non-resident investment in domestic debt due to the dollar's appreciation against EM currencies between 2011 and 2016.

[1] Based on a sample of about 2,000 EM-dedicated fixed-income funds, the data shown in Chart 1 refers to the monthly net assets of funds investing in local-currency bonds.

[2] Throughout this paper, we use the terms local currency and domestic debt almost interchangeably. However, this is not strictly the case for several countries. Local-currency debt refers to debt issued in the currency of the issuing country, and domestic debt typically refers to debt issued under the laws of the issuing countries (i.e. not under New York state law or English law). There are many countries that issue debt in their national currency under a governing law other than that of the country. Equally, there are bonds issued under local law that are payable in and/or indexed to a foreign currency.

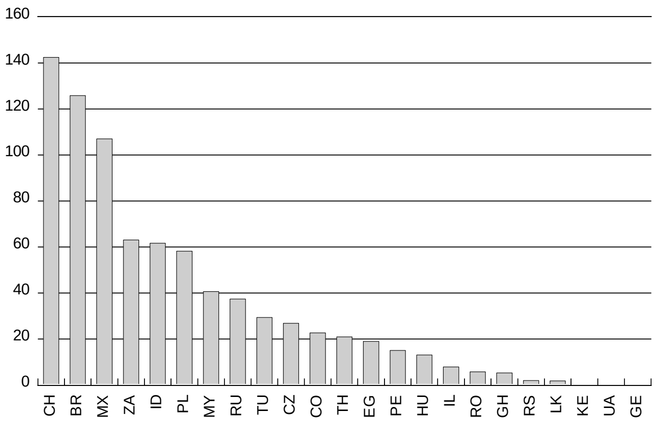
[3] To the best of our knowledge, this is the most complete set of countries reporting non-resident positions in sovereign domestic debt. The aggregate in Chart 2 is an estimate and is influenced by the aggregation of positions in nominal and market-value terms.

[4] We have excluded China from the aggregate calculation, as the data we worked with only starts in 2014 and the size of China's holdings is large enough not to make the series comparable prior to 2014.

We estimate that, when holdings are converted at constant exchange rates, non-resident exposure is shown to have grown by 50% since 2014.

At a country level, foreign investors in domestic sovereign debt hold positions that exceed USD 100bn in China, Brazil and Mexico, the three largest country exposures. The next three subsequent exposures are to South Africa, Indonesia and Poland (of about USD 60bn each).

CHART 3: NON-RESIDENT HOLDINGS OF SOVEREIGN DOMESTIC DEBT BY ISSUER COUNTRY (IN USD BN)



Source: national finance ministries and central banks, UniCredit Research

2. Investing in sovereign local currency: the investor's and issuer's perspectives

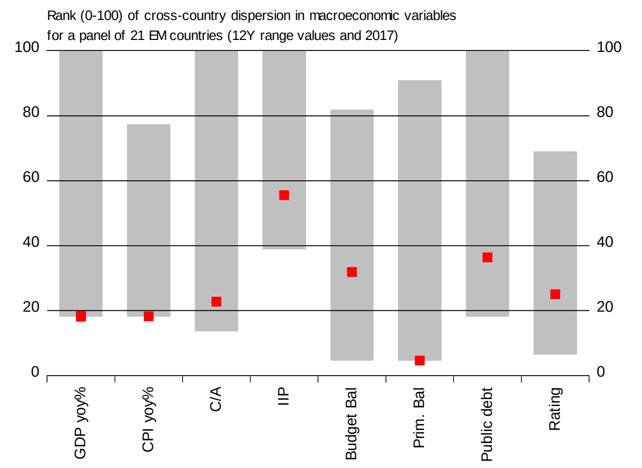
2.1 The issuer side: redemption from "original sin"

We think that the better macroeconomic policy mix at the country level, in particular floating exchange rates and inflation targeting, has been one of the main drivers of foreign investors' appetite for local-currency debt. The collapse of commodity prices and the sharp appreciation of the USD against EM currencies in the 1980s led to a wave of EM sovereign-debt defaults, which peaked in the 1990s at USD 350bn of debt in default[5]. In the early 2000s, a growing body of academic literature highlighted that EM countries suffered from "debt intolerance", or the inability to sustain debt above a low threshold, and from "original sin", or the inability to attract foreign investors into local-currency-denominated bonds[6].

However, as reported in the section above, trends in the last 20 years have differed greatly from this assessment: foreign investors' positions in local-currency debt have increased over time with no apparent evidence of "original sin" and public debt has also increased in most emerging markets without triggering further defaults.

We also find that, over the last several years, the volatility of macroeconomic outcomes has declined both according to a country comparison and at the country level.

CHART 4: THE VOLATILITY OF MACROEONOMIC VARIABLES IS HITTING MULTI-YEAR LOWS[7]



Source: IMF WEO, UniCredit Research

This lower volatility could be the result of EM countries gradually moving towards adopting free-floating exchange rates, a gradual replacement of foreign-currency debt for debt denominated in local currencies and more transparent monetary policy via the targeting of inflation[8] rather than monetary aggregates. These policies have made local bonds more attractive to local investors and have reduced these country's vulnerabilities. In particular, floating exchange rates do not result in large currency overvaluations, which were a significant cause of debt defaults in the past.

Large foreign ownership of domestic debt also carries risks for the issuer country, such as a higher correlation with the global financial cycle; herd behavior; sterilization costs from withdrawing foreign inflows of liquidity, which also increase the debt-servicing burden; and pressure on the current account via larger interest payments owed to foreign investors.

High foreign-currency exposures may also lead to heightened volatility in bond yields and in the currency. This was the case in 2017 in South Africa, where the debt market was almost 3x as volatile as the general index.

[5] *Database of Sovereign Defaults, 2017* by David Beers and Jamshid Mavalwalla. *Bank of Canada Technical Report N 101* (June 2017)

[6] See "Debt Intolerance" Carmen M. Reinhart, Kenneth S. Rogoff, Miguel A. Savastano (2003). NBER Working Paper No. 9908 and "The Pain of Original Sin" Barry Eichengreen, Ricardo Hausmann and Ugo Panizza, (August 2003)

[7] We measured the dispersion at each annual point between 1990 and 2022 (using IMF WEO forecasts) as the difference between the 85th and 15th percentile of the cross-country distribution, using a panel of 21 countries. We ranked this dispersion measure between 0 and 100 on the basis of the whole 33-year period analysed. We plotted the rank 12Y range and 2017 value. For most variables, cross-country volatility was at a multi-year low.

[8] With the exception of China, all EM countries in this study are targeting inflation.

With 40% of its bonds owned by foreigners, South Africa faced potential rating downgrades that would have seen the country dropped from Citi's World Government Bond Index (WGBI). Such a large proportion of ownership contributed to elevated volatility.

2.2 Investors' in local debt: capturing excess returns

Investors' interest in EM local currency debt has gone hand in hand with the inclusion of an increasing number of countries in EM government-bond indices. This local-currency sub-asset class is attractive to investors due its portfolio diversification and its high currency-adjusted returns, which are well in excess of that of the bonds issued by developed nations, albeit at the price of higher volatility.

Investments in local-currency sovereign bonds are volatile and follow cycles that show a significant persistence and large drawdowns during downturns. Table 1 analyses four trading cycles and three longer periods: **1.** that from 2002 (since the index began), **2.** that from 2009 (the post-crisis period) and **3.** that of the last two years (which marked the beginning of a new wave of inflows into EM. We compared the returns of the JPMorgan Government Bond Index-Emerging Markets (GBI-EM) indices to those of the US Treasury's total 5-10Y total-return index and concluded that the GBI-EM USD index outperforms in almost all periods in terms of absolute and often also in risk-adjusted terms. Over the longer 16Y period the EM local-currency index outperformed US Treasury bonds by 510bp p.a.

TABLE 1: EM LOCAL-CURRENCY INDEX VS. 5-10Y UST

Period		Years	USD total return	Annualized return	Volatility of returns	Return /vol.
Jan-02 to Aug-08	**EM**	**6.6**	**199%**	**8.9%**	**18.1%**	**0.5**
	UST		46%	5.6%	5.9%	1.0
Oct-08 to May-13	**EM**	**4.5**	**93%**	**12.1%**	**15.6%**	**0.8**
	UST		34%	6.6%	6.7%	1.0
Sep-13 to Jul-14	**EM**	**0.9**	**13%**	**8.5%**	**15.1%**	**0.6**
	UST		5%	4.2%	5.2%	0.8
Jan-16 to Dec-17	**EM**	**1.6**	**34%**	**10.8%**	**16.5%**	**0.7**
	UST		1%	4.1%	0.5%	7.5
From 2002	**EM**	**16.0**	**258%**	**10.9%**	**8.3%**	**1.3**
	UST		113%	5.8%	4.9%	1.2
From 2009	**EM**	**9.0**	**47%**	**10.9%**	**4.3%**	**2.5**
	UST		31%	5.5%	3.1%	1.8
From 2016	**EM**	**9.0**	**30%**	**10.8%**	**14.1%**	**0.8**
	UST		3%	4.1%	1.6%	2.6

Source: UniCredit Research

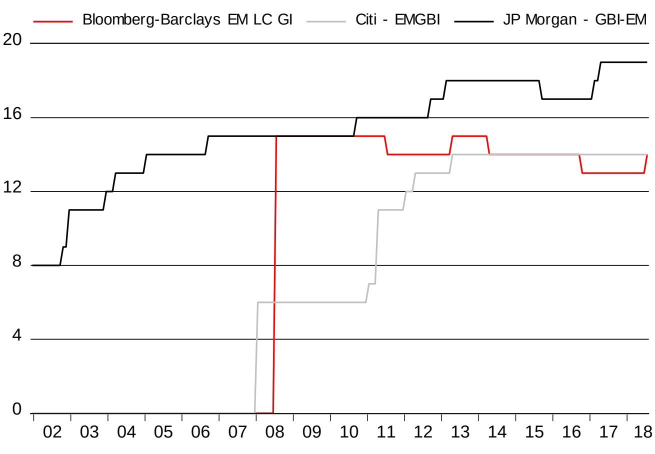
3. Local EM indices and inclusion criteria

EM investors may face legal and technical barriers to investing in local-currency sovereign debt. Among these are capital controls, a lack of hedging instruments, security and custodial complex arrangements, restrictions on holding securities, taxes such as withholding taxes and capital-gains taxes, no active points in the yield curve, instrument complexity (difficult to model in-house, value at risk models), etc. To a large extent, inclusion in an index ensures the replicability of the returns reported on Table 1, albeit at a cost of a reduced investment universe both in terms of instruments and countries.

EM local-currency debt is usually included in two types of government-bond indices (GBI): **1.** "World" or "Aggregate" indices with both emerging and developed countries and **2.** "Emerging" indices, which have to do with EM countries only. The three major providers of GBI are **1.** Citi, which calculates the EMGBI and World GBI; **2.** JPMorgan, which publishes the GBI-Global and GBI-EM indices, and **3.** Bloomberg-Barclays, which publishes the Global Aggregate Index (GA) and the EM local GBI indices. Variants of Citi's and Bloomberg-Barclays' indices feature less-stringent criteria and include larger numbers of countries.

Due to its more-stringent criteria inclusion for, only a few EM countries are included in the world bond indices. The Barclays-GA features less onerous criteria and includes ten EM countries. Poland and Mexico are also included in the three major world GBI indices. South Africa is included in the Citi-WGBI index, and Israel is part of the JPMorgan GBI (broad) index.

CHART 5: COUNTRIES IN MAJOR EM-DEDICATED LOCAL-CURRENCY SOVEREIGN INDICES



Source: Barclays, JPMorgan, Citi, UniCredit Research

With markets evolving to become deeper and more liquid, the number of bonds included in EM-dedicated indices has also increased since the early 2000s, when the JPMorgan GBI-EM was launched (it currently has 19 country components in its broadest index definition).

The assets under management (AUM) amount that is benchmarked to each of these indices is not publicly disclosed by all providers. JPMorgan has reported that about USD 200bn of AUM are benchmarked to the different variations of the GBI-EM series, though we believe this may be an underestimate.

4. Effects of index inclusion on foreign ownership

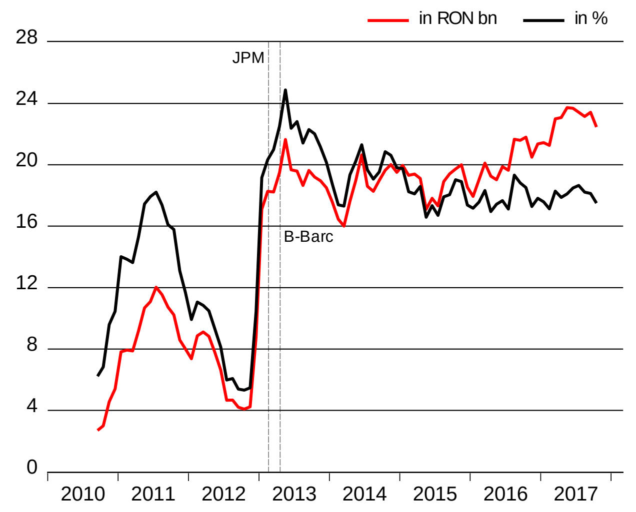
We looked at 15 EM countries[9] that report long data on foreign ownership of domestic bonds and analyzed their evolution. For most countries, inclusion in one or several of the EM and world indices is just one of many factors that drive the stock of foreign holdings.

There is a first-mover effect in ownership in terms of bond-index inclusion. The first-time effects of index eligibility, which, for most countries, mean inclusion in the JPMorgan GBI-EM index, drive up foreign ownership significantly, as inclusion in such an index lowers the hurdles to investing in local bonds (with regard to settlement, custody and tax-related matters). For example, in the case of Hungary, in the six-year period between its becoming eligible for inclusion in the JPMorgan GBI-EM index and its inclusion in the Bloomberg-Barclays EM index, foreign ownership increased threefold and affected 1/3 of domestic bonds. By the time it was included in a second index, foreigners already owned 20% of the market in Indonesia and Malaysia, 10% in Mexico and 8% in Brazil. In general, the effects of being included in a second index are difficult to distinguish from those triggered by general market conditions. This is particularly true as the second time a bond becomes eligible for inclusion in an index it typically is included in the Bloomberg-Barclays index. For most of these countries their admission took place in July 2008, just months before the global financial crisis that led to a collapse in foreign ownership collapsing before it subsequently recovered from 2010 on.

The preparations for index eligibility can take several years as they often require changes to the micro structure of bond markets (e.g. establishing primary dealers), to settlement requirements (e.g. settlement via Euroclear) and in terms of bond issuance. In the case of Romania (shown in Chart 6), market participants foresee these events and start acquiring positions before the country's bonds have been included in an index.

[9] The data on foreign ownership for Colombia (2014), China (2014) and Sri Lanka (reported on an annual basis)are not extensive enough for them to be taken into consideration here. Data on foreign ownership for Argentina, Chile, India, Nigeria, Philippines and Uruguay are not reported.

CHART 6: ROMGB OWNERSHIP AND INDEX INCLUSION



Source: Romanian Ministry of Finance, UniCredit Research

5. Drivers of foreign ownership

We model the drivers of foreign ownership of local currency debt (as a share of total exiting local debt) using a number of financial and economic variables: the spread of the country bond yield over the 10Y US Treasury yield, the VIX index so as to capture general market risk aversion, the local-currency sovereign rating, local bond returns in USD equivalent and several macro variables such as public debt to GDP and external and fiscal variables.

At the country level we note that the signs and size effects of each of these variables are very heterogeneous and the effect of the variables often runs counter to expectations. We also estimate a panel fixed-effects model to estimate assess effects that are common to all countries and conclude that local ratings have a significant effect on ownership with 1 notch rating downgrade leading to about 1.5% ppt points decline in holdings (in % of total), increases in the VIX also lead to lower foreign ownership and among the macro variables, increases in the current account and reductions in debt to GDP lead to higher foreign ownership. The effect of higher spreads over US Treasury yields is counterintuitive as it leads to lower ownership possibly as higher local currency bond yields may be caused by deteriorating fundamentals.

6. Effects of foreign ownership on exchange rates and bond yields

On Table 2 below we quantify for 12 countries the effect on exchange rates and bond yields of increases in foreign ownership. For each country, we first estimate a model of the nominal effective exchange rate using quarterly changes in interest-rate differentials against EUR and USD 1Y money-market rates and changes in the ownership rate of local bonds.

We find that, for several countries, the effect on nominal exchange rates can be significant, with a 1% increase in ownership (leading to a 1.4% appreciation of the nominal effective exchange rate in Turkey and 0.8% appreciation in Indonesia and Mexico.

We also estimate a model local-bond yields as a function of non-resident bond holdings and find that an increase in ownership leads to a reduction in bond yields for most countries, and the effect can be quite significant[10]. For Russia and Turkey, we estimate that an increase of one percentage point in foreign ownership for a given calendar quarter results in bond yields tightening by 20bp and 30bp. On average the effect is about 12bp for all countries.

TABLE 2: EFFECTS OF NON-RESIDENT OWNERSHIP

Country	Effect on NEER of 1% increase in foreign ownership	Effect on bond yields (in bp) of 1% increase in foreign ownership
HU	0.47***	-12**
CZ	0.05	-3**
PL	0.21	-3*
BR	0.52	24
ID	0.83**	-14*
MX	0.82**	3
PE	-0.0	1
RO	0.39***	-6**
RU	0.88	-20***
TH	0.18	*13****
TU	1.41***	-32***
ZA	0.37	-5

***1%, **5%, *0% significance Source: UniCredit Research

7. Candidates for future inclusion

The number of EM countries that have made it into EM LC fixed-income indices is limited (as shown in Table 4 in annex) and constitute the mainstream among EM countries. However, numerous other countries (so-called frontier markets) are already attracting foreign investors' attention and are not included in any of the three major indices. Table 3 contains a non-exhaustive list of 11 frontier markets that offer attractive nominal and real yields in their local currencies and that are currently excluded from the main indices due to, among other reasons, capital controls, restrictions on ownership and market size.

According to our calculations, six of these countries could potentially have eligible debt exceeding USD 5bn and meet market-size criteria for inclusion in mainstream indices. At least in three of them there are NDF contracts available to foreign investors, and, in the case of Serbia and Ghana, foreign ownership in excess of 30% is as high as it is in other mainstream EM countries.

[10] In order to account for outliers, we included time dummy variables in the models for Czech Republic, Hungary, Poland and Turkey.

The common feature of these markets is the small issue sizes of their bonds which do not meet the index inclusion requirements.

TABLE 3: FRONTIER LOCAL-CURRENCY BOND MARKETS

	CPI yoy%		Bond yield	NDF	Foreign ownership	Eligible debt
	2018e	Target	%		%	USD mn
CEE/CIS						
Armenia	4.0	4%	6-12%			1,147
Georgia	3.4	3%	8-10%		8%	665
Kyrgyzstan	5.5	5-7%	8-17%			303
Serbia	3.0	1.5-4.5%	3-5.5%		30%	6,521
Ukraine	7.0	4-8%	15-16%	Yes	1%	15,488
Africa						
Kenya	5.2	2.5-7.5%	10-13%	Yes	1%	13,086
Ghana	8.0	6-10%	15-16%	Yes	40%	7,337
Namibia	5.8	n/a	7-11%			1,911
Zambia	8.0	6-8%	16-18%	Yes		2,028
LatAm						
Dom Rep	4.2	3-5%	7-9%			7,963*
Jamaica	5.5	4-6%	6-9%			6,215*

*includes GDN settled in USD Source: UniCredit Research

We believe that Serbia could potentially be included in the JPMorgan and Bloomberg-Barclays EM indices as it is close to meeting the requirements discussed in annex although primary dealers have not been chosen and bonds are not yet settled via Euroclear. Its Ministry of Finance will issue two 5Y and 10Y benchmark bonds during 1Q18, bringing the total benchmark sized issues (with outstanding amounts between USD 0.5-1bn) to five. Foreign ownership of dinar-denominated Serbian bonds peaked in 2014 at about 50% of outstanding bonds and has steadily declined over the last three years. Currently, most of these investors are based in the US, and inclusion in the EM indices would lead to a broader diversification of ownership.

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Annex: Index inclusion criteria and current composition

The following criteria are considered when determining whether or not to include a country or a bond in an index:

1. **Definition of EM country:** JPMorgan uses an income-ceiling calculation, which is adjusted annually and is based on GNI per capita. Bloomberg-Barclays and Citi follow the country classification of the WB or IMF.

2. **Replicability and investor access:** Countries can become ineligible due to capital controls or the inability by foreign investors to replicate returns.

3. **Country rating:** Citi's indices have explicit country-rating criteria, which, for EM inclusion, require a rating of above C/Ca (effectively meaning that the country cannot be in default). The Citi World index only accepts countries rated A-/A3 and excludes countries rated below BBB- and Baa3. JPMorgan GBI indices require that a country not be rated A3/A- or above for three consecutive years.

4. **Market size:** Citi's and Bloomberg-Barclays' EM indices require at least USD 5bn of eligible debt for a country to remain in the index, with Citi also requiring USD 10bn of eligible debt for initial inclusion. JPMorgan indices do not require a minimum market size.

5. **Minimum issue size:** JPMorgan requires that minimum issues amount to USD 1bn for local bonds and to USD 500mn for global bonds (in local currency). Citi's and Bloomberg-Barclays' indices have established minimum size requirements by currency of about USD 0.5-1bn and USD 300-700mn respectively.

6. **Hedging instruments:** For countries to be eligible for inclusion in Bloomberg-Barclays' indices, their forward and/or NDF markets must be open to foreign investors.

7. **Instrument characteristics:** These must be fixed-coupon bullet bonds (non-callable bonds or puttable), with additional restrictions being placed on specific bonds at the country level.

8. **Other:** Citi has an "additional markets" index, which features less-stringent requirements for inclusion.

Table 4 summarizes the current composition of the major EM and world indices that include eligible EM countries. There is a substantial degree of overlap in terms of country composition between the three major EM indices but also notable differences – the Citi EMGBI includes fewer countries than the other two main indices.

TABLE 4: INDEX MEMBER COUNTRIES AND INCLUSION DATES[11]

	Citi		JPMorgan		Bloomberg-Barclays	
	EM	World	EM	World	EM	World
CEE						
CZ		Oct-11*	Apr-17		Jul-08	Jan-05
HU	Apr-11	Oct-11*	Dec-01		Jul-08	Apr-17
PL	Jan-08	May-03	Dec-01	x	Jul-08	Jan-05
RO			Feb-13		Apr-13	
RU	Jan-12	Dec-12*	Jan-05		Jul-08	Apr-14
TU	Apr-11	Oct-11*	Mar-04		Jul-08	ex Oct-16
Asia						
CH	Jul-13*	Apr-11*	Dec-03		Apr-08+	
ID	Jan-08	May-08*	Dec-02		Jul-08	
IN	Jul-13*	Apr-12*	Dec-01		Jul-08+	
LK	Jul-13*	Apr-11*				
MY	Jan-08		Dec-01		Jul-08	Jan-06
PH	Jan-08	May-08*	Sep-10		Jul-08	
TH	Jan-08	May-08*	Dec-01		Jul-08	Jul-08
LatAm						
AR			Feb-17		ex Jul-11	
BR	Jan-11	Oct-11*	Dec-01		Jul-08	
CL	Apr-12	Oct-11*	Oct-02		Jul-08	Jan-05
CO	Apr-11	Oct-11*	Dec-02		Jul-08	
MX	Jan-08	Oct-10	Dec-01	x	Jul-08	Jan-05
PE	Apr-13	Oct-11*	Nov-06		Jul-08	
UY			Jun-17			
Middle East & Africa						
EG					Jul-08+	
IL		Oct-11*		x	Jul-08	Jan-12
NG			ex Sep-15		Apr-13+	
ZA	Apr-11	Oct-12	Dec-01		Jul-08	Jan-05

*eligible for inclusion in the Citi GBI "Additional" Markets; +eligible for inclusion in the Bloomberg-Barclays EM LC Government Universal Index only

Source: UniCredit Research

References:

"Bloomberg Barclays Index Methodology", March 2017

"Citi Index Guide. A comprehensive overview of Citi's range of fixed income indices", January 2017

"Government Bond Index (GBI) Family of Indices. Rules and methodology", September 2015.

[11] Additional notes: **1.** With regard to JPMorgan's indices, Nigeria was included in Sep 2012, put on watch in Jan 2015 and excluded in Sep-Oct 2015. The Philippines, Brazil, Chile and Colombia also have indices of global notes. **2.** With regard to the Bloomberg-Barclays GA index, Hungary was added and removed several times from the aggregate index between 2012 and 2017. Thailand was added in 2002 and removed in 2007. It was added again in July 2008. **3.** With regard to the Bloomberg-Barclays LC GBI index, Egypt was excluded from the GA index in Apr-14 but remained in the Universal EM index

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