FOCUSED ON FUNDAMENTALS
A LOOK INSIDE THE BARINGS EMERGING MARKETS LOCAL DEBT INVESTMENT PROCESS

Highlights

- As a starting point for the Barings Emerging Markets Local Debt investment process, we separately analyze interest rates and currencies, which allows us to identify and capitalize on each of these unique return sources
- We use state-of-the-art models to analyze interest rates, and utilize proprietary competitiveness models for currencies. The models allow us to project expected returns for rates and to rank the best relative value opportunities across the whole of our investment universe
- The ultimate driver of our investment decisions comes from our in-depth fundamental analysis, which is used to check and refine our model outputs and to determine the magnitude of conviction that we have for investment positions

EM Local Debt: Understanding Returns

The starting point for our investment process is the recognition that EM Local Debt has two unique sources of returns: interest rates and currencies. Philosophically, we are not in the 'inflation is dead' camp. Inherent to our approach is the view that each country's economic cycle determines monetary conditions and interest rate levels for that country and that while economies may have linkages to developed markets or one another, economic cycles are rarely synchronized. Thus we may view a slowing economy—an unattractive prospect to some, perhaps—as presenting a potentially attractive investment opportunity from a rates perspective. For currencies, we view economic competitiveness as the primary determinant of currency positions and returns.

Separating the analysis of interest rates and currencies enables us to broaden the scope of the overall opportunity set, while at the same time enhancing the focus of our research and analysis for each of these two distinct return drivers. We believe that the key differentiators for the Barings Emerging Markets Local Debt strategy are found in the proprietary tools and analysis that we use. Indeed, the foundation of our investment process is built upon highly sophisticated models and is further supported by in-depth economic analysis that helps to guide and determine the strength of conviction in our investment views.

INTEREST RATES

CYCLE MODELS
- Dynamic Stochastic General Equilibrium Model

CYCLE ANALYSIS
- Proprietary Leading Indicators
- Country-specific Economic Files

CURRENCIES

COMPETITIVE MODELS
- Export Penetration
- Real Effective Exchange Rates
- International Reserves Accumulation

BALANCE OF PAYMENTS ANALYSIS
- Trade Balance
- Foreign Investments
- Activity

CASE STUDY

INTEREST RATES: SOUTH AFRICA

South Africa currently offers attractive bonds according to the results of our bond curve analysis. We can see this in both the outputs from the DSGE model and our fundamental analysis of the economy using the country file (FIGURE 1) as well as through an analysis of break-even inflation for the country.

- South Africa's inflation target is 3%-6%, while current inflation is 4.7% and has ranged from 4.0% to 7.0% since 2013.
- Nominal bonds have a current yield of 9.5%, while inflation-linked bonds are yielding 2.5%, therefore marking roughly a 7.0% difference.
- The market expectation is for higher inflation in South Africa, as evidenced by the evolution of break-even inflation expectations from sub ~7% to 7.5% today.

While the consistency in findings from our different analysis raises our conviction that a position of up to one full year contribution to duration ahead of the benchmark is desirable, this is partially offset by the country's more challenging political environment. For that reason, we believe that a 0.75 contribution to duration versus the benchmark is preferable. Our currency framework suggests that the rand is of decent value, but the conviction behind the currency is lower than that of the bond. Matching the duration target and a small overweight in the currency results in the pick of the 2041 bond.

For Illustrative Purposes Only

Interest rates – Modeling the EM Monetary Order

We aim to capitalize on inefficiencies in interest rate markets that stem, in part, from EM central banks growing increasingly independent over the last two decades. Similar to developed markets, today's EM central banks are enacting monetary policies that reflect the unique position of their individual economies rather than taking the lead from the U.S. or other developed economies. The move toward more flexible monetary policy means that the correlation with developed markets and even between emerging markets is lower today than 25 years ago, thereby creating a greater diversity of investment opportunity and the potential for better risk-adjusted returns.

Generally speaking, financial markets have not recognized the significant changes in EM central banking frameworks toward more flexible regimes in the aftermath of balance of payments crises of the 1990s. We see this as an opportunity. The models, research and metrics that we use help us to identify pricing inefficiencies and to pinpoint where the most attractive investment opportunities exist.

On the interest rate side, we employ the Dynamic Stochastic General Equilibrium Model (DSGE), which has been adapted and re-calibrated from a model developed by the International Monetary Fund.[1] The state-of-the-art model is similar to those used by central banks to help guide their monetary policy decisions. Using GDP growth, inflation, exchange and policy rates as inputs, the DSGE is updated and tested monthly to produce indicators that point toward likely central bank actions.

In addition to policy insights, as a small open-economy model, the DSGE also enables us to study how an economy evolves over time and how it reacts to exogenous shocks.

Taking the outputs from the DSGE we construct a theoretical yield curve for 25+ countries across the EM local debt investment universe, which we compare to the actual yield curve to calculate expected returns. However, the strength of this approach is not in the individual country outputs, but rather their relative rankings. By applying the same analysis across all countries, the DSGE prevents any arbitrary influence and remains equally biased on an analytical basis toward each economy. As a result, even when the theoretical yield curve for an individual country may be inexact, the relative ranking is likely to be correct. That is because the DSGE captures the scope for and likely direction of monetary policy changes in a given economy.

As we are selecting investments on a bond-by-bond basis across the whole of our investment universe, the DSGE enables us to identify positions in the countries and specific points of the yield curve that are likely to deliver the strongest performance.

Interest Rates – Fundamental Analysis Builds Conviction

We complement our DSGE quantitative analysis with in-depth fundamental macroeconomic analysis in individual country files, which function as comprehensive economic databases similar to those used by the International Monetary Fund. We combine this analysis with a qualitative assessment of the countries based on our research, knowledge and familiarity with the respective central banks. We then compare the DSGE outputs to our fundamental analysis and forecasts, which helps us to check and refine the theoretical yield curve for each country. We may even use findings from our fundamental analysis to override the model.

This stage of analysis is critical for determining the magnitude of our overweight or underweight positions and giving us conviction as to where the highest potential returns will likely be generated from.

1. International Monetary Fund (IMF), 2006, "Practical Model-Based Monetary Policy Analysis—A How-To Guide", (Washington). Available at: https://www.imf.org/external/pubs/ft/wp/2006/wp0681.pdf

Rates Positioning

As described above, expected bond returns are derived from the difference between the individual country's yield curve and a theoretical yield curve constructed for each country using quantitative (DSGE model and country files) and qualitative (analyst knowledge) tools. Bonds with the lowest expected returns are avoided or sold, while those with the highest are held or purchased.

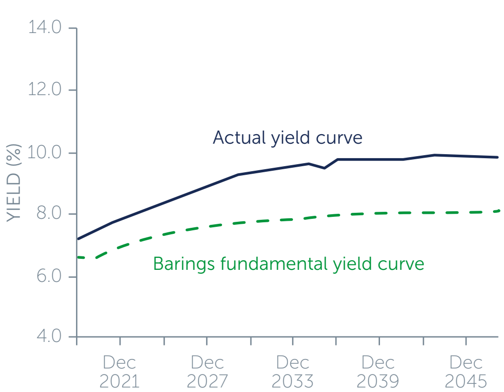
We have broad parameters that we follow per country when sizing positions. This includes positioning of up to one full year above or below the benchmark from a contribution to duration standpoint. Our strategy is differentiated by the fact that we take off-benchmark positions and our high conviction approach means that we are likely to stay invested in bonds that we believe will outperform over the longer term, even when shorter term technical factors drive the market. Overall, we typically hold 20-25 interest rate positions in the portfolio, which is slightly higher than the benchmark.

FIGURE 1: DSGE INTEREST RATE MODEL — SOVEREIGN ANALYSIS

SOUTH AFRICA

	2016Q1	2016Q2	2016Q3	2016Q4	2017Q1	2017Q2	2017Q3	2017Q4	2018Q1	2018Q2	2018Q3	2018Q4	2019Q1	2019Q2
Interest Rates	6.94	7.29	7.34	7.35	7.34	7.33	6.80	6.41	6.17	6.12	6.24	6.47	6.79	7.20
Real Rate	1.33	1.10	2.94	2.57	3.60	3.67	2.75	2.27	1.84	1.39	1.11	0.99	0.96	1.01
Equilibrium Real Rate	2.83	2.51	2.27	2.25	2.26	2.43	2.39	2.35	2.31	2.28	2.25	2.23	2.20	2.18
Real GDP	-0.60	0.64	0.64	0.44	0.66	0.52	1.46	2.54	3.60	3.81	3.53	3.24	2.97	2.73
Real GDP seasonally adjusted	-1.49	3.10	0.44	-0.31	-0.59	2.51	4.24	4.02	3.65	3.34	3.10	2.86	2.59	2.35
Equilibrium Growth	1.62	1.64	1.66	1.68	1.71	1.74	1.76	1.79	1.81	1.83	1.84	1.86	1.87	1.89
GDP Gap	-0.53	-0.17	-0.47	-0.97	-1.54	-1.35	-0.73	-0.17	0.29	0.67	0.98	1.23	1.41	1.53
Inflation q/q	6.65	4.98	5.46	5.21	4.56	3.53	3.65	4.05	4.14	4.34	4.73	5.13	5.48	5.84
Inflation	5.39	5.31	5.51	5.58	5.05	4.69	4.24	3.95	3.84	4.05	4.32	4.58	4.92	5.29
FX	17.48	16.96	15.71	15.02	14.10	14.53	14.54	14.67	14.89	15.16	15.46	15.77	16.07	16.35
Equilibrium FX	14.37	14.05	13.94	13.98	14.09	14.36	14.41	14.44	14.48	14.53	14.58	14.65	14.72	14.80
Y Gap Shock	-0.93	-0.22	-0.65	-0.76	-0.93	-0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BARINGS THEORETICAL YIELD CURVE



RATES VALUATION

Bond Name	Yield Bid	Yield Ask	Yield Expected	Expected Return (Hedged)	Hedge	Expected Return (Unhedged)
SAGB 8 12/21/2018 Govt	7.8	7.72	6.74	8.68	6.65	1.9
SAGB 7.25 1/15/2020 Govt	8.09	8.05	6.86	10.33	6.65	3.46
SAGB 6.75 3/31/2021 Govt	8.36	8.32	7.05	12.01	6.65	5.03
SAGB 7.75 2/28/2023 Govt	8.71	8.68	7.33	14.28	6.65	7.15
SAGB 10.5 12/21/2026 Govt	9.41	9.38	7.69	18.98	6.65	11.57
SAGB 8 1/31/2030 Govt	9.87	9.85	7.84	24.12	6.65	16.38
SAGB 7 2/28/2031 Govt	9.95	9.92	7.88	25.66	6.65	17.82
SAGB 8.25 3/31/2032 Govt	10.05	10.03	7.91	26.42	6.65	18.54
SAGB 8.875 2/28/2035 Govt	10.24	10.22	7.97	28.34	6.65	20.34
SAGB 6.25 3/31/2036 Govt	10.16	10.14	7.99	29.42	6.65	21.35
SAGB 8.5 1/31/2037 Govt	10.3	10.28	8.01	29.26	6.65	21.2
SAGB 9 1/31/2040 Govt	10.39	10.37	8.05	30.25	6.65	22.13
SAGB 6.5 2/28/2041 Govt	10.31	10.28	8.06	30.96	6.65	22.8
SAGB 8.75 1/31/2044 Govt	10.42	10.4	8.09	30.91	6.65	22.75
SAGB 8.75 2/28/2048 Govt	10.38	10.35	8.11	30.79	6.65	22.64

SOURCE: *FOR ILLUSTRATIVE PURPOSES ONLY. DATA AS OF NOVEBMER 30, 2017.*

CURRENCY FRAMEWORK

Currencies – Competitiveness Counts

Unlike many currency-focused investment processes, which rely on technical analysis, momentum and carry models for investing, our approach focuses on economic competitiveness. In our view, economic competitiveness is the principal factor that determines a country's currency returns over time and our analysis is therefore focused primarily on measures of competitiveness, including:

Export-based real effective exchange rates (XBRFX) We analyze the export structure for all of the world's countries to determine the most competitive currencies for the basket of goods and services that a given country exports;

Export penetration (XSLICE) This calculation uses international trade data from the IMF to determine which countries are expanding their market share for exports and which are not;

Industrial production growth In isolation, the above export competitiveness measures do not show the total picture. It is only by adding industrial production growth that we are better able to gauge competitiveness and to determine a currency's attractiveness;

Reserves Lastly, by incorporating international reserves accumulation into our analysis, we capture an economy's ability to meet external obligations and to absorb adverse external shocks and the potential impact on the currency.

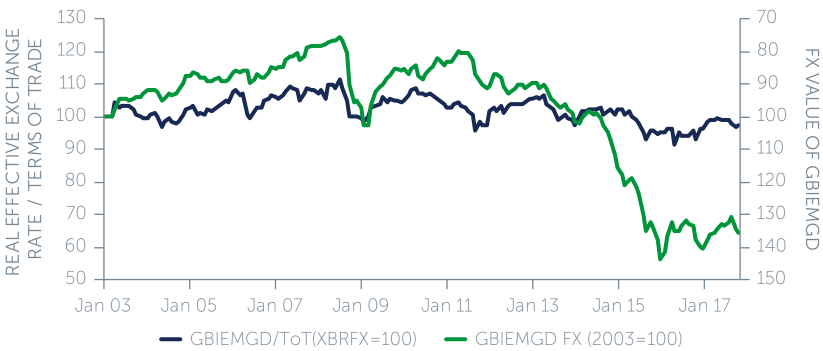
Taking the above parameters, the model calculates discrete scores and then combines these into an overall recommended weighting for 110+ currencies (see FIGURE 2). Our investment positioning respects the model recommendation, but it is our country-by-country balance of payments analysis (see below) that determines whether we have long, short or no positions in specific currencies.

FIGURE 2: BARINGS EM LOCAL DEBT CURRENCY FRAMEWORK – ILLUSTRATIVE EXAMPLES

	Export-based REER (XBRFX)	Export Penetration (XSLICE)	Industrial Production Growth	Reserves	Weight
China	-1.2	2.1	0.6	0.0	1.5
Hong Kong	0.7	-1.2	0.2	0.1	-0.3
Colombia	-1	0.9	0.0	0.2	-0.1
Croatia	0.0	-0.3	0.0	-0.2	-0.4
Czech Republic	-0.5	0.5	0.4	-0.1	0.5
Denmark	0.5	-1.0	0.0	-0.3	-0.5
Egypt	-1.3	1.6	0.4	0.2	0.7

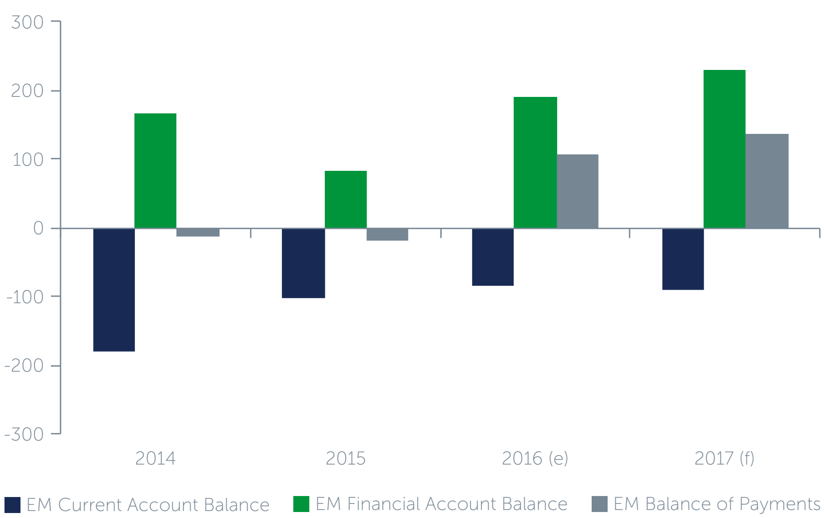
SOURCE: *FOR ILLUSTRATIVE PURPOSES ONLY. DATA AS OF NOVEMBER 2017.*

FIGURE 3: REAL EFFECTIVE EXCHANGE RATE / TERMS OF TRADE



**JPMORGAN GOVERNMENT BOND INDEX EMERGING MARKETS GLOBAL DIVERSIFIED (GBIEMGD)*
SOURCE: *HAVER ANALYTICS, J.P. MORGAN, BARINGS. AS OF NOVEMBER 30, 2017.*

FIGURE 4: BALANCE OF PAYMENTS ANALYSIS



SOURCE: *HAVER AND BARINGS PROPRIETARY FORECASTS. AS OF NOVEMBER 30, 2017.*

Currencies – Fundamental Analysis Builds Conviction

Similar to our approach to interest rates, our in-depth balance of payments analysis complements the investment process for currencies and gives us conviction in the positions we take. The research analyzes and forecasts each line of the balance of payments on both the current and capital accounts to understand what a country's future foreign exchange position is likely to be and how that will affect the value of the currency. Where the valuation component from this analysis is aligned to that from our competitiveness models, we gain the highest levels of conviction.

The final analysis we carry out for each country before sizing the position is to take our proprietary valuation component from the export-based real effective exchange rate calculation and divide this by the economy's terms of trade, which is the international price for the goods and services that a country exports. By dividing the export-based REER valuation (XBRFX) – a measure based on what that country sells abroad – by the international price of those exports, we are able to capture a purer value of the currency. Thus, the models and balance of payments analysis help us to gain a strong assessment of relative value, while this measure gives us a more holistic view.

Positioning

When sizing the position, we have set guidelines which allow for up to 10% overweight or underweight any currency, which permits us to be completely un-invested in any currency as no single country has more than a 10% share of the benchmark.

CASE STUDY

EGYPTIAN POUND (EGP)

For Illustrative Purposes Only

In November 2016, Egypt significantly devalued its currency following years of severe external imbalances, which grew out of the changing domestic and geopolitical landscape and the adverse economic consequences that developed in the aftermath of the July 2011 revolution. As a result of the mounting economic challenges, the Egyptian authorities floated the currency and lifted most capital controls, allowing the pound to depreciate from a level of around 9 EGP per USD to more than 18 EGP per USD. The authorities also started a more drastic adjustment program, with the assistance of the IMF.

As part of Barings' ongoing research and analysis into emerging and frontier debt markets, we undertook a detailed assessment of Egypt's external account balances and future outlook under the IMF program and fiscal adjustment, in addition to weighing the most pertinent geopolitical considerations. Our analysis showed that Egypt's balance of payments would likely improve, led by a narrowing of the current account deficit. Together with rising reserves accumulation, we concluded that this bolstered the outlook for the currency and determined that the long end of the EGP-denominated bond offered one of the most attractive entrance points for investment.

FIGURE 5: EGYPT'S CURRENT ACCOUNT BALANCE

US $Billions (fiscal year ending June)	2012	2013	2014	2015	2016	2017	2018
Current Account Balance	-10.146	-6.390	-2.691	-12.143	-19.831	-19.248	-16.927
Trade Balance Goods	-34.14	-30.69	-34.10	-39.06	-38.68	-38.69	-36.65
Exports	25.07	26.99	26.08	22.25	18.70	20.39	22.43
Oil & Gas	11.23	13.02	12.41	8.89	5.67	6.71	7.38
Other	13.85	13.97	13.67	13.35	13.03	13.68	15.05
Imports	59.21	57.68	60.18	61.31	57.39	59.08	59.08
Oil & Gas	11.77	12.12	13.25	12.37	9.29	10.98	10.98
Others	47.44	45.56	46.94	48.94	48.09	48.09	48.09
Trade Balance Services	12.06	12.45	8.27	10.74	6.53	7.99	9.36
Exports	20.63	22.03	17.44	21.81	16.08	16.71	16.98
Transportation	8.59	9.19	9.47	9.85	9.53	9.79	10.06
o/w Suez Canal	5.21	5.03	5.37	5.36	5.12	5.38	5.65
Travel	9.42	9.75	5.07	7.37	3.77	4.14	4.14
Govt services	0.28	0.44	0.65	1.38	0.38	0.38	0.38
Other	2.35	2.65	2.24	3.21	2.40	2.40	2.40
Imports	8.56	9.58	9.16	11.07	9.55	8.73	7.62
Transportation	1.37	1.66	1.72	1.54	1.34	1.34	1.34
Travel	2.50	2.93	3.04	3.34	4.09	3.68	3.31
Govt services	1.15	1.24	1.07	0.85	0.78	0.70	0.56
Other	3.54	3.75	3.33	5.34	3.34	3.01	2.40
Income	-6.48	-7.41	-7.23	-5.70	-4.47	-5.34	-6.33
Receipts	0.25	0.20	0.19	0.21	0.40	0.40	0.40
Payments	6.73	7.60	7.42	5.91	4.87	5.73	6.73
o/w interest paid	0.53	0.76	0.66	0.64	0.75	0.86	
Transfers	18.41	19.26	30.37	21.88	16.79	16.79	16.69
Private	17.78	18.43	18.45	19.21	16.69	16.69	16.69
Official	0.63	0.84	11.92	2.67	0.10	0.10	
Total Funding Needs	-10.15	-6.39	-2.69	-12.14	-19.83	-19.25	-16.93

SOURCE: *IMF / CBE / OWN ESTIMATES. AS OF SEPTEMBER 2017.*

Summary

In summary, we believe that Barings' combination of quantitative and qualitative analysis and tools provide a comprehensive and rigorous framework for investing in emerging markets local debt. We see several key differentiators for our strategy that we believe provide a competitive advantage over our peers.

First, we treat interest rates and currencies as distinct return drivers and therefore conduct separate research and analysis to identify and invest in what we view to be the most promising opportunities. We believe that economic activity is the main driver of inflation and interest rates and that economic competitiveness determines an economy's currency attractiveness.

Second, we use proprietary models for both rates and currencies that help to guide our investment decisions by ranking countries on where the best relative value opportunities exist for each of these unique return sources. On the rates side, we calculate expected returns by using the DSGE, a highly sophisticated model similar to those used by central banks. On the currency side, we assess real effective exchange rates, export penetration, industrial production growth and international reserves accumulation.

Third, we carry out rigorous fundamental macroeconomic analysis for every country in order to check and refine our interest rate and currency model outputs and to build conviction in our investment views. Where we gain conviction that bonds and currencies present the potential for attractive returns, we buy or hold these positions and those that appear less compelling are sold or avoided.

Lastly, we view the performance track record of the Barings Emerging Markets Local Debt strategy and its ability to produce alpha during up and down cycles as a testament to the effectiveness of the underlying investment process and our competitive advantage.

Barings is a $304+ billion global financial services firm dedicated to meeting the evolving investment and capital needs of our clients. We build lasting partnerships that leverage our distinctive expertise across traditional and alternative asset classes to deliver innovative solutions and exceptional service. A subsidiary of MassMutual, Barings maintains a strong global presence with over 650 investment professionals and offices in 16 countries.*

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**As of December 31, 2017*

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