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Asset Class Insight

ANALYSING MANAGER 'STYLE' IN EM LOCAL CURRENCY DEBT

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Key Points

- In our previous paper, '*Inside the Engine Room of Emerging Markets Local Currency Debt*', we discussed the differences in behaviour between the three components of return – coupon, price appreciation and currency – and their implications for active management.
- In this paper, we come back to the three drivers of return, this time from the point of view of an investor who is evaluating investment managers. How much systemic (market) exposure are managers taking in their pursuit of alpha, and do they demonstrate any 'style' bias?
- We propose a framework based on the notion that Emerging Markets Local Currency (EMLC) debt market exposure consists of three 'sub-betas', measuring the sensitivity of returns to currency, coupon and interest rate dynamics.
- Knowing a manager's style bias can help assess past performance, identify which managers can be complementary in combined portfolios, and assess whether a portfolio's sensitivities over time are in line with the manager's stated investment philosophy.

THE EMERGING
EDGE

INTRODUCTION

Since Fama and French introduced their three-factor model in the 1990s, style analysis – based on characteristics such as size, value, market risk, momentum, quality and profitability – has become a staple of equity investing. Style analysis is less commonly used in the emerging markets debt (EMD) space, but it can be useful, especially in EM local currency debt.

EMLC has three clearly defined drivers of return – coupon, currency (FX) and price appreciation – which lend themselves well to a style analysis approach. And given that these drivers have behaved very differently over time, using style analysis to gauge an EMLC-specific version of manager style bias can be a useful guide to decision making.

This paper proposes a framework for gauging the relative component sensitivities that EM local currency managers are taking to generate their excess returns. We'll start by talking about what we mean by style bias, and how it is expressed in portfolios. We'll then summarise how our framework measures style bias, numerically and graphically, and discuss how to interpret the results when evaluating managers.

AMPLIFYING BETA IN EM LOCAL CURRENCY DEBT

In their pursuit of alpha, some EM local currency debt managers seek to allocate their whole active risk budget to idiosyncratic exposures, avoiding active bets on market direction. Others seek to add alpha by gearing up their exposure to the three sub-betas of EMLC. Many others attempt to do the first but end up implicitly (and sometimes unintentionally) doing the second.

Ways to amplify beta via security selection might include:

- **Coupon**: A manager seeking to out-yield the index might assemble an overweight in the higher-coupon countries in the index, resulting in amplified exposure to the coupon component.
- **Currency**: A manager seeking to amplify exposure to EM currency market movements might go overweight the higher-beta currencies and short the lower-beta currencies in the index.
- **Price appreciation (rates)**: Because the EM local currency benchmark consists of government debt, price appreciation would originate from duration and yield curve exposure, i.e. interest-rate movements. With that in mind, from now on we will interchangeably use the term 'rates' to describe the price appreciation component of the index return. To gear up exposure to rate movements, a manager could go overweight on duration and/or emphasise countries with steeper yield curves.

MEASURING PORTFOLIO SENSITIVITIES TO CURRENCY, COUPON AND RATES

To measure an EM local currency portfolio's style bias, we used regression analysis to calculate a manager's sensitivities (**betas**) to the currency, coupon and rates components, together with a **residual** (*see appendix for methodology*).

The **sub-betas** measure the sensitivity of returns to each of the three factors. So, for example, if beta to currency is 1.1 and the currency component of the index generates a total return of 1%, the manager's total return from currency would theoretically be 1.10%.

The **residual** represents idiosyncratic alpha. While it's tempting to interpret the residual as a measure of all off-benchmark exposures, in reality some of these positions will have a correlation to the benchmark. For example, the residual might include off-benchmark exposures such as frontier countries. But an investment in a frontier market like Vietnam would typically be correlated with index constituents in the same region, so it could partly be reflected in the rates or coupon sub-betas. It is therefore more accurate to say that the residual reflects that portion of manager returns that are not correlated with the movements in any of the benchmark components.

WHY MEASURE STYLE BIAS?

Gauging managers' long-term exposure to coupon, rates and currency can be useful in a number of ways. For example, style bias may be deliberate or it may be inadvertent. Measuring component betas can help evaluate whether managers' stated investment philosophy corresponds with their actual portfolio outcomes. If they claim to minimise active currency bets, or take a short-duration approach or focus their active risk budget entirely on idiosyncratic rather than systemic exposures, does the analysis bear them out?

Measuring component betas can help evaluate whether managers' stated philosophy corresponds with their actual portfolio outcomes

One potential benefit to identifying long-term style tilt is to give an idea of how different managers would interact in a larger portfolio, to see which might be additive and which might be complementary in the long run.

Another application of this approach would be evaluating performance over specific review periods. Manager outperformance or underperformance needs to be qualified according to how the manager's style bias affected excess returns over the review period. Take the example of an EMLC manager who has outperformed in a period where EM currencies have rallied strongly. If the manager has a high beta to FX, this might prompt further questions about how much of the alpha is idiosyncratic security selection skill and how much is gearing to the market.

Finally, this approach can help investors understand whether the style of their manager is aligned with their rationale for holding the asset class. For example, if the asset class is held on the expectation of a strong rally in EM currencies, then holding a manager who is defensive on currencies is self-defeating. If, instead, the asset class is held for the long term due to the perceived attractiveness of the coupon, then investors would be better served by seeking out a manager with a high sensitivity to coupon risk.

Ultimately, this model is as much about questions as it is about answers. While regression analysis can measure the direction and size of a manager's long-term factor gearing, it can't describe the path the manager has taken to get there. A style tilt may be a conscious or unconscious decision. It may be the result of consistent long-term strategic asset allocation, or dynamic tactical asset allocation. In this respect, this framework can suggest lines of questioning and act as a starting point for further conversations with managers.

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HYPOTHETICAL EXAMPLES

The table in **Figure 1** shows hypothetical examples from this framework, with adjusted manager sensitivities to each component. The first two columns show portfolios that are defensive and aggressive without having any style bias, while the other three are tilted towards specific return drivers.

In the graphics in **Figure 2**, the **benchmark** is represented by the dark grey triangles, with betas of 1 for currency, coupon and price appreciation. The manager's **portfolio** is represented by the blue triangle. To help interpret the extent of gearing relative to the benchmark, the pale grey frame is set at a beta of 1.5 for each component, representing the realistic range of the beta estimates. Historically, few managers have exceeded the 1.5 level, so this offers a reference point for how aggressive or defensive a manager is.

Figure 1: Examples of Gearing to the Components of EM Local Currency Market Return

	Low Beta Portfolio	High Beta Portfolio	Geared to Coupon and Rates Risk	Defensive on FX and Coupon, Geared to Rates Risk	Geared to Currency, Defensive on Coupon and Rates Risk
Beta to FX	0.9	1.1	1.0	0.7	1.3
Beta to Coupon	0.9	1.1	1.3	0.7	0.8
Beta to Rates	0.9	1.2	1.3	1.1	0.8

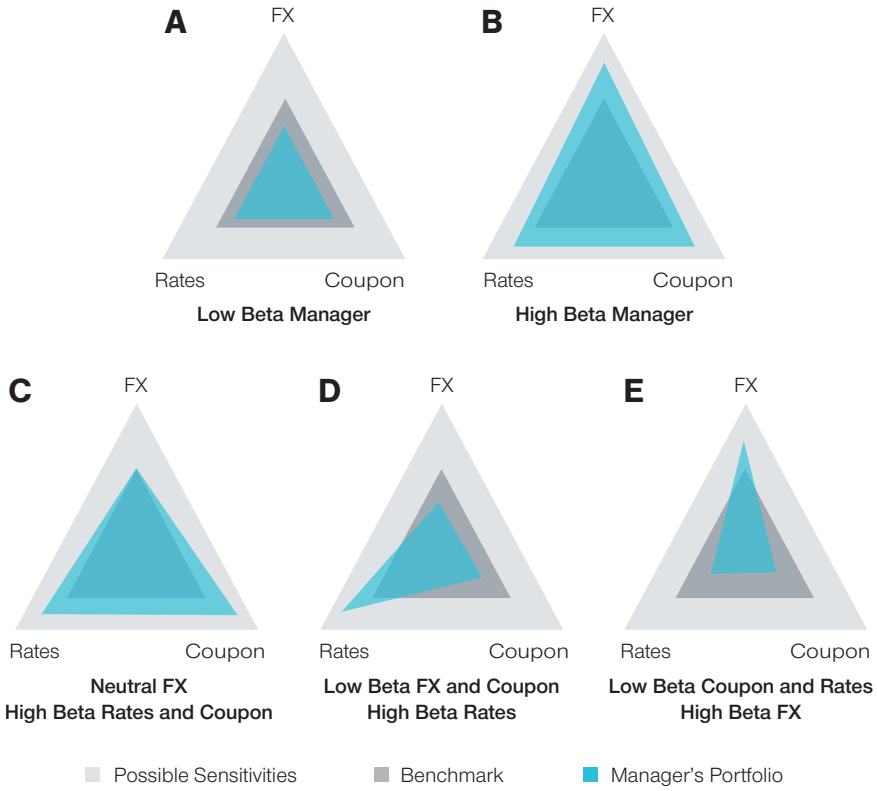
Source: T. Rowe Price. For illustrative purposes only.

Portfolios A and **B**, which have no style tilt, would be expected to have a performance profile that is aligned with the market. These exposures would not theoretically bias the manager towards a particular sub-beta, but would result in a style that was the equivalent of simply holding less (A), or more (B) of the asset class. Manager A would effectively cut the tails off the return distribution, underperforming the index in upswings and outperforming in downturns. B would add octane in bull markets and underperform the index in downturns.

Portfolio C is tilted towards both rates and coupon. This could happen if, for example, the manager emphasizes longer-duration bonds which pay higher coupons.

Portfolio D is geared to rates but below benchmark on coupon. This might happen if the manager has longer duration in safe names paying lower coupons. It could also, for example, reflect an emphasis on longer-dated zero-coupon bonds, for example in benchmark countries such as Indonesia where foreign investors are taxed on interest but not capital gains.

Figure 2: Graphical Representation of Gearing to the Components of EM Local Currency Market Return



Source: T. Rowe Price. For illustrative purposes only

Portfolio D is also tilted away from currency. One way this could happen is a phenomenon we quite often see in practice: persistent dollar strength has created headwinds for EM local currency managers over the past decade, so some who are benchmarked to the J.P. Morgan GBI-EM Global Diversified index nevertheless make significant use of US dollar-denominated bonds – a practice which could result in a defensive stance on EM currency.

Portfolio E has amplified currency sensitivity, but is defensive on rates and coupon. This might happen if the manager wanted to gear up FX exposure using derivatives, freeing up risk budget with a focus on short-duration bonds, which would typically pay lower coupons.

Figure 3: Understanding the Marginal Impact of the Component Sensitivities

	SCENARIOS		
	Currency	Rates	Coupon
Manager C	Unaffected	Will **outperform** if EM interest rates/yields fall	Will accumulate **faster**
Manager D	Will **underperform** if EM currencies rally	Will **outperform** if EM interest rates/yields fall	Will accumulate **more slowly**
Manager E	Will **outperform** if EM currencies rally	Will **underperform** if EM interest rates/yields fall	Will accumulate **more slowly**

Source: T. Rowe Price.

T. ROWE PRICE'S APPROACH IN CONTEXT

Where would T. Rowe Price's profile fit in with the examples above? We have a bottom-up research bias, with a heavy preference for idiosyncratic alpha. This implies that we would have a relatively small beta footprint, because we allocate a significant proportion of our active risk budget to idiosyncratic and relative value positions.

Our alpha has been predominantly idiosyncratic

In '*Inside the Engine Room of Emerging Markets Local Currency Debt*' we observed that EMLC is almost two asset classes in one. One is essentially a government bond investment that has delivered very stable coupon flows and relatively steady price appreciation over the past 15 years. The other, currency, has the volatility profile of a risk asset. Managers can use a style tilt to sway the portfolio's profile in either the 'core' or 'risk' directions.

Our emphasis is on exploiting the 'core' properties of the asset class. We treat currency selection and bond selection as two separate decision processes. Our primary goal with bond selection (in other words coupon and rates) is to generate alpha by out-yielding the benchmark and seeking capital appreciation. With currency selection, we pursue alpha with an emphasis on volatility control.

In currency, we favour having a diversified bucket of active views, both relative value and directional. We deliberately control exposure to systemic factors, using relative-value currency pairings that seek to eliminate a shared market risk factor. For example, if we are positive on the Russian rouble but don't want the oil market exposure, we might fund that position with a short position in another oil-sensitive currency such as the Colombian peso or the Canadian dollar. Another example might be a long-short pairing in two Eastern European countries both of which are highly correlated to the euro-area economy. This might allow us to express positive and negative idiosyncratic research views without adding to euro-area market exposure.

We've observed that currency has weaker 'valuation anchors'[1]. For example, valuation anomalies can persist for much longer in exchange rates than they do in bond prices. With that in mind, and given the better return-risk trade-offs to coupon and rates, we have historically been more directionally aggressive in bond selection.

In short, over the years our beta profile has been quite similar to that of Manager C – without a strong tilt to currency market exposure, particularly during what has been an extended US dollar bull run over the past several years, but with moderate tilts to coupon and rates. Our alpha has been predominantly idiosyncratic. According to our EM Local Currency manager style model, between March 2010 and October 2019, only 7% since of our excess return was explained by 'gearing' to the components of index return.

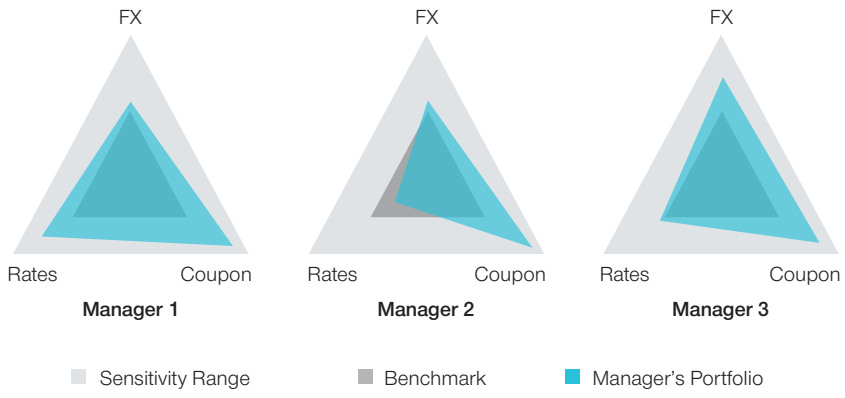
THE FRAMEWORK IN PRACTICE: EXTRACT FROM A STUDY

How would the framework be applied in real life? One example is a study we ran when we first formulated the framework, applying it to nine EMLC debt funds* (the relatively short time period was dictated by the inception of the newest product). Of these, **Figure 4** shows sub-betas for the three funds with the most pronounced style tilt, for a euro-based investor.

*From May 2014 to October 2019 (the relatively short time period was dictated by the inception of the newest product).

Figure 4: Component Sensitivities for Three Funds

Characteristic	Manager 1	Manager 2	Manager 3
β (FX)	1.06	1.06	1.19
β (Coupon)	1.41	1.40	1.36
β (Rates)	1.27	0.78	1.06



Source: T. Rowe Price. For illustrative purposes only.

[1]See Inside the Engine Room of Emerging Markets Local Currency Debt.

All three managers had a strong emphasis on **coupon**. This is unsurprising given that, for many investors, the coupon component's historically low-volatility, high return profile makes it the key reason for exposure to the asset class.

Of the nine managers, only Manager 3 had a pronounced **currency** tilt (a sub-beta of 1.19). Given that the FX component of EMLC returns has historically been significantly more volatile than rates or coupon, it is unsurprising that this manager displayed the highest annualised volatility of the group.

On **rates**, Manager 3 did not have a pronounced tilt. Manager 1 was aggressive and Manager 2 was defensive, suggesting a short-duration bias. So, if the investor wanted coupon beta but did not have a strong view on rates, then Managers 1 and 2 might be complementary, all else being equal.

CONCLUSION

As an asset class that has only recently become mainstream, EM Local Currency debt lacks many of the analytical tools that are commonly used by investors when evaluating other, more mature, asset classes. The framework discussed in this paper extends a commonly used style analysis approach to EMLC, allowing investors to identify whether managers have displayed a significant style tilt over time. The framework helps investors classify managers based on their relative sensitivities to the three drivers of the asset class: coupon, currency and price appreciation.

Being able to measure style bias can give investors perspective on managers' past performance; act as a guide to combining managers; and allow comparison of managers' long-term market exposures against their stated investment philosophies. While this framework does not claim to provide all the answers in manager evaluation, it can help inform deeper due diligence conversations in this nuanced, complex, but potentially rewarding asset class.

APPENDIX

PROPOSED FRAMEWORK FOR MANAGER DECOMPOSITION

Analytical Framework I: Sensitivities and True Alpha

A: Regress Benchmark Components onto Benchmark Return

$$R_{BM,i} = \beta_1 FX_{BM,i} + \beta_2 Coupon_{BM,i} + \beta_3 Rates_{BM,i} + \varepsilon_i$$

By definition $\beta_1 = \beta_2 = \beta_3 = 1$ as these three components sum to total return...

...so we can now use these estimated coefficients to adjust for timing issues etc.

B: Regress Benchmark Components onto Manager Return

$$R_{Man,i} = \beta_4 FX_{BM,i} + \beta_5 Coupon_{BM,i} + \beta_6 Rates_{BM,i} + \varepsilon_i$$

Estimate the unadjusted manager sensitivities to the three components

C: Normalise Manager Coefficients by Benchmark Coefficients

$\beta_{FX} = \beta_4 / \beta_1 \Rightarrow$ *Adjusted Manager Sensitivity to FX component*

$\beta_C = \beta_5 / \beta_2 \Rightarrow$ *Adjusted Manager Sensitivity to Coupon component*

$\beta_R = \beta_6 / \beta_3 \Rightarrow$ *Adjusted Manager Sensitivity to Rates component*

Adjust the manager coefficients using the estimated benchmark coefficients to account for timing etc.

D: Calculate 'True Alpha' as the Residual after Accounting for the Coefficient Adjusted Component Returns

$$\alpha_{Man} = R_{Man} - (\beta_{FX} FX_{BM} + \beta_C Coupon_{BM} + \beta_R Rates_{BM})$$

This is the excess return by the manager over the benchmark after accounting for the component gearing

...continued

APPENDIX *continued*

PROPOSED FRAMEWORK FOR MANAGER DECOMPOSITION *continued*

Analytical Framework II: Importance

Substitute the summed components in place of the estimated model to find base fit

Total manager variation unexplained by ungeared benchmark components

$$\text{Portion of manager total variation explained by benchmark} = 1 - \frac{\sum_{n=1}^{k}((FX_n + Rates_n + Coupon_n) - TR_{Man,\,n})^2}{\sum_{n=1}^{k}(TR_{Man,\,n} - \overline{TR}_{Man})^2}$$

Calculate difference in fit between estimated and summed exposures to isolate component gearing impact

Total manager variation unexplained by ungeared benchmark components

Total manager variation unexplained by geared benchmark components

$$\text{Portion of manager total variation explained by component gearing} = \frac{\sum_{n=1}^{k}((FX_n + Rates_n + Coupon_n) - TR_{Man,\,n})^2}{\sum_{n=1}^{k}(TR_{Man,\,n} - \overline{TR}_{Man})^2} - \frac{\sum_{n=1}^{k}((\beta_{FX}\,FX_n + \beta_R Rates_n + \beta_C Coupon_n) - TR_{Man,\,n})^2}{\sum_{n=1}^{k}(TR_{Man,\,n} - \overline{TR}_{Man})^2}$$

Calculate idiosyncratic variation through removing variation explained through estimated model

Total manager variation unexplained by geared benchmark components

$$\text{Portion of manager total variation not explained by geared benchmark} = \frac{\sum_{n=1}^{k}((\beta_{FX}\,FX_n + \beta_R Rates_n + \beta_C Coupon_n) - TR_{Man,\,n})^2}{\sum_{n=1}^{k}(TR_{Man,\,n} - \overline{TR}_{Man})^2}$$

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