

Emerging Insight

EM FX has become more idiosyncratic since COVID

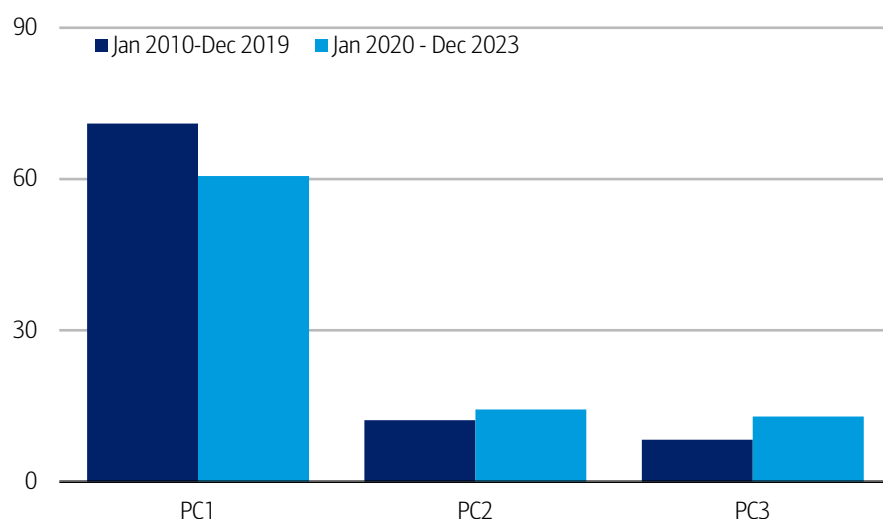
Key takeaways

- EM FX more idiosyncratic now vs 2010-19. PC1 explains 61% of variance (71% in 2010-19). PC1+PC2 explain 75% (83% before)
- DXY + US 10y real are main EM FX drivers now. Global growth is less important after COVID: less weak EM FX in hard landing
- Hard landing: falling commodities + US rates support EM FX. EM monetary policy matters too. KRW is the real beta to EM FX now

By Mikhail Liluashvili and David Hauner

Chart of the day: EM FX has become more idiosyncratic since COVID (PCA on EM FX)

The chart shows the percentage of variance explained by each PC. The first PC reflects global factors.



Source: Bloomberg, MATLAB, BofA Global Research; We run principal component analysis on all major EM currency pairs against USD
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Global growth is less important for EM FX now

PCA shows that the first PC explains about 61% of the variance after COVID, and about 71% in 2010-19. This means EM FX is more idiosyncratic now which is mainly driven by tight monetary policy in Brazil and Mexico. The importance of global growth has declined since the pandemic, which should provide some support to EM FX in case of a hard landing, as should falling oil prices and a rally in US rates in a hard landing scenario.

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Abbreviations

EM – emerging market

FX – foreign exchange

DXY – dollar index spot

ToT – terms-of-trade

PC – principal component (PC1 is first principal component)

PCA – principal component analysis

RV is relative value

PCA confirms structural shifts in EM FX after COVID

We run a principal component analysis (PCA) on major EM FX pairs against the USD. We use monthly frequency data and run PCA for: 1) January 2010-December 2019, and 2) January 2020-December 2023. For more details on methodology, see the Appendix. There have been a few notable structural changes in EM FX: 1) EM currencies have become more idiosyncratic and the first PC now explains the lower variation than pre-COVID, driven mainly by BRL and MXN; 2) the correlation sign between commodity prices and the first PC has changed; 3) global growth has become less important for EM FX after COVID. However, the broader dollar remains the main driver of EM FX and its first principal component.

The second finding is in line with the view expressed in our previous piece on EM FX. For details, see: [Emerging Insight: Hard landing might be less bad than usual for EM FX 05 December 2023](#).

EM FX is more idiosyncratic now than pre-COVID...

The first PC explains only 60% of the EM FX variance since COVID. It used to capture as much as 71% before the shock (see Chart of the day). Moreover, the average correlation between individual currency pairs and the first PC was 81% before COVID and only 67% after (Exhibit 1 - Exhibit 2).

Exhibit 1: 2010-19: correlation of EM FX pairs to principal components

Many EM currencies were driven primarily by PC1, a proxy for global factors

	PC1	PC2	PC3
BRL	0.96	-0.16	-0.03
CLP	0.97	-0.03	-0.01
CNY	0.52	0.16	0.78
COP	0.97	-0.09	0.13
CZK	0.9	0.2	-0.29
HUF	0.96	-0.01	-0.13
INR	0.89	-0.3	-0.26
IDR	0.94	-0.26	-0.16
ILS	0.12	0.81	-0.38
KRW	0.43	0.65	0.43
MYR	0.97	-0.03	0.09
MXN	0.95	-0.16	0.13
PEN	0.96	-0.04	0.12
PHP	0.84	-0.29	0.38
PLN	0.94	0.14	-0.12
SGD	0.82	0.41	0.27
ZAR	0.96	-0.15	-0.16
TWD	0.6	0.69	-0.04
THB	0.67	0.41	-0.33
TRY	0.82	-0.39	0.27

Source: Bloomberg, Haver, MATLAB, BofA Global Research; the table shows correlation of USDXXX with principal components

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Exhibit 2: 2020-23: correlation of EM FX pairs to principal components

EM FX has become more idiosyncratic after COVID driven by BRL and MXN

	PC1	PC2	PC3
BRL	-0.27	0.12	0.59
CLP	0.85	0.25	0.28
CNY	0.76	0.29	-0.53
COP	0.79	-0.17	0.33
CZK	0.49	0.83	0.16
HUF	0.89	0.05	0.32
INR	0.93	-0.29	-0.05
IDR	0.84	0.06	-0.03
ILS	0.76	0.04	-0.58
KRW	0.97	0.03	0.07
MYR	0.96	-0.07	-0.11
MXN	-0.47	0.76	0.33
PEN	0.17	-0.5	0.77
PHP	0.97	-0.15	0.06
PLN	0.81	0.15	0.45
SGD	0.32	0.88	0.19
ZAR	0.84	0.1	-0.28
TWD	0.9	0.11	-0.38
THB	0.91	-0.12	0.32
TRY	0.85	-0.44	-0.09

Source: Bloomberg, Haver, MATLAB, BofA Global Research; the table shows correlation of USDXXX with principal components

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...driven primarily by BRL and MXN

The more idiosyncratic nature of EM FX performance is most evident in the performance of the Brazilian real and Mexican peso, which had almost a perfect correlation (0.96 and 0.95, respectively) with the first PC before COVID. However, in January 2020-December 2023, the correlation dropped to -0.27 and -0.47. If we exclude BRL and MXN, the average correlation between an EM FX pair and the first principal component has not changed much. The change was most likely driven by the significant tightening of monetary policy as well as high real rates and carry in Brazil and Mexico, which resulted in a divergent performance of these currency pairs from the rest of EM FX.

Best RV trade – long BRL/MXN

Our favorite EM RV trade is long BRL/MXN (current: 3.51, open: 3.52). Risks are fiscal slippage in Brazil and strong inflows into Mexico due to nearshoring. Idiosyncratic nature

of MXN and BRL performance after COVID allows us to focus on local fundamentals. We find BRL is vastly undervalued and MXN slightly overvalued. Moreover, we are more optimistic than consensus on Brazil's fiscal outlook. In Mexico, starting the monetary easing as soon as 1Q24 and/or launching a reserve accumulation program would lead to MXN weakening. Presidential election in early June should increase volatility and add a risk premium to the peso. For the original report, please see [LatAm FI & FX Strategy Viewpoint: Buy BRL/MXN – 2024 Macro Outlook Favors Brazil Over Mexico 28 November 2023](#).

Commodity prices have changed the correlation sign with the first PC

Another big difference between the pre- and post-COVID periods is the change in the correlation sign between commodity prices (oil and metals) and the first PC. This is consistent with the observation in our previous report (see: [Emerging Insight: Hard landing might be less bad than usual for EM FX 05 December 2023](#)). If higher commodity prices were associated with a weaker USD and stronger EM FX before COVID, the correlation sign changed to the opposite one in 2020-23. This is especially true for oil, as it has become highly correlated with US terms-of-trade (Exhibit 3 - Exhibit 4).

PC1 = DXY + core rates now; before COVID: PC1 = DXY + global growth + rates

DXY is still the main driver of the first PC now – as it was before COVID. However, other drivers have altered. Before COVID, global nominal growth (in particular, EM export volumes and oil prices), together with US real rates, also had a strong correlation with the first component, but after COVID US and Eurozone rates became much more important drivers of the first PC.

Cointegration analysis: PC1 is DXY + US real rates in both periods

Cointegration analysis suggests that PC1 is driven by DXY and US real rates for both periods under consideration. Simple correlation analysis might be misleading since our principal components and most explanatory variables are not stationary. As a result, we conduct cointegration tests to find out whether there is a long-run relationship between principal components and explanatory variables. The first PC has strong cointegration with DXY for both periods. Moreover, PC1 is cointegrated with the US 5y real rate in 2010-19 and with 10y real rate (albeit weakly) in 2020-23.

PC2 = US rates + credit spreads now; 2010-19: same factors + global growth

The key drivers of the second PC have not changed much since COVID. Before the shock, nominal global growth (mainly), as well as US rates and US BAA credit spreads (to a much lesser extent), were strongly correlated with the second PC. Since COVID, nominal global growth has become much less correlated with the second PC, while the correlation of US rates to PC2 has increased.

Cointegration: PC2 is global growth + 5y breakeven (mainly) in 2010-19...

In 2010-19, PC2 was strongly cointegrated with EM exports (a good proxy for nominal global growth) and weakly so with US BAA 10y credit spreads and US 5y breakevens. This highlights that global nominal growth was an important driver of EM FX.

...and US credit spreads + US rates and VIX after COVID

However, in 2020-23, US BAA 10y credit spreads, the VIX index and, to some extent, US 5y breakevens became cointegrated with the second PC. Global nominal or real growth, and commodity prices are no longer cointegrated with PC2, highlighting the shifting relationship between global growth and EM FX.

PC3 mainly reflects idiosyncratic factors, in our view

There is no cointegration between PC3 and any of explanatory variables suggesting that it most likely reflects idiosyncratic factors. However, there are some changes in correlation trends. Since COVID, commodity prices (the EM export price) and nominal EM exports (which is a proxy for nominal global growth) have had the highest correlation

with the third principal component. These variables are much less correlated with the first and second PC, suggesting commodity prices and global nominal growth are less important for EM DX now than in 2010-19. Before COVID, the third PC was strongly correlated with USDCNY, highlighting the importance of China.

KRW is the only real beta to EM FX now

Our cointegration analyses suggest that USDKRW is the only EM currency that has been a beta to EM FX after COVID because: 1) it has a strong correlation with the first PC; and 2) it is cointegrated with the first PC. No other currency satisfies these conditions. Based on the same conditions, USDPEN was the best proxy for EM FX before COVID. USDHUF and USDMYR could have also been considered as betas to EMFX, although their cointegration with EMFX was weaker than that of USDPEN.

Exhibit 3: 2010-19: US rates + DXY are most important for EM FX

Global growth was also important for PC1

	PC1	PC2	PC3
Brent crude oil	-0.88	-0.29	-0.02
Industrial metals	-0.84	-0.03	0.43
US BAA 10y spread	-0.41	0.69	-0.2
US 5y swap rate	0.29	-0.32	0.43
US 1y1y forward rate	0.63	-0.36	0.32
US 5y breakeven	-0.42	-0.51	0.06
US money market conditions	0.43	-0.14	0.62
US 5y5y real rate	-0.91	0	0.12
Dollar index	0.97	0.07	-0.07
US Economic Surprises	-0.06	0.28	0.25
US Swap 2s5s	-0.71	0.21	-0.09
VIX	-0.34	0.4	0.26
EU Swap 2s5s	-0.42	-0.02	0.15
USDCNY	0.54	0.16	0.77
Atlanta Fed GDP	0.05	-0.2	0.19
EUR Swap rate 5y	-0.84	0.2	0.35
China Economic surprises	-0.1	-0.02	0.31
US 2 year swap	0.67	-0.38	0.39
US 10 year swap	-0.34	-0.18	0.37
US 10y breakeven	-0.74	-0.32	0.06
US 10y real rate	0.19	0.02	0.43
US 5 year swap	0.29	-0.32	0.43
EM export volume	0.84	-0.48	-0.05
EM export price	-0.81	-0.38	-0.16
EM exports	-0.1	-0.81	-0.21

Source: Bloomberg, Haver, MATLAB, BofA Global Research; the table shows correlation of financial variables with principal components

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Exhibit 4: 2020-23: US rates + DXY are again key drivers of EM FX

Importance of global nominal growth has declined after COVID

	PC1	PC2	PC3
Brent crude oil	0.43	-0.49	0.46
Industrial metals	0.06	-0.62	0.6
US BAA 10y spread	-0.13	0.83	-0.16
US 5y swap rate	0.88	-0.41	0.01
US 1y1y forward rate	0.88	-0.35	0.05
US 5y breakeven	0.04	-0.65	0.59
US money market conditions	0.66	-0.42	-0.2
US 5y5y real rate	0.41	-0.73	0.34
Dollar index	0.94	0.07	0.12
US Economic Surprises	-0.51	-0.21	-0.14
US Swap 2s5s	-0.88	0.01	0.07
VIX	-0.21	0.68	0.05
EU Swap 2s5s	-0.86	0.28	0.25
USDCNY	0.78	0.29	-0.5
Atlanta Fed GDP	-0.17	-0.38	0.03
EUR Swap rate 5y	0.9	-0.37	-0.04
China Economic surprises	-0.02	-0.29	-0.01
US 2 year swap	0.91	-0.35	-0.07
US 10 year swap	0.85	-0.46	0.05
US 10y breakeven	0.16	-0.69	0.54
US 10y real rate	0.92	-0.25	-0.22
US 5 year swap	0.88	-0.41	0.01
EM export volume	0.39	-0.65	0.54
EM export price	0.37	-0.5	0.7
EM exports	0.41	-0.56	0.67

Source: Bloomberg, Haver, MATLAB, BofA Global Research; the table shows correlation of financial variables with principal components

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Hard landing: EM FX might weaken less than usual, but policy response matters

In a hard-landing scenario, falling commodity prices would support EM FX given the change in correlation after COVID. Moreover, the divergent performance of MXN and BRL after the pandemic shows that policy response from local central banks would also matter. In countries that preserve high real rates despite slowing growth, FX could gain significant support, especially if a potential global recession does not involve a major credit event. Finally, the lower importance of global nominal growth for EM FX after COVID means that slowing global nominal and real growth should have a smaller impact on EM currencies against the US than usual.

Appendix: PCA estimation approach

First, we gather historical data for average spot exchange rates against the USD from Haver Analytics for 20 EM currency pairs: USDBRL, USDCLP, USDCNY, USDCOP, USDCZK, USDHUF, USDINR, USDIDR, USDILS, USDKRW, USDMYR, USDMXN, USDPEN, USDPHP, USDPLN, USDSGD, USDZAR, USDTWD, USDTHB and USDTRY. Our framework uses monthly average exchange rate data. We then normalise this data to allow for comparison across currencies by taking logarithms of the data and calculating Z-scores.

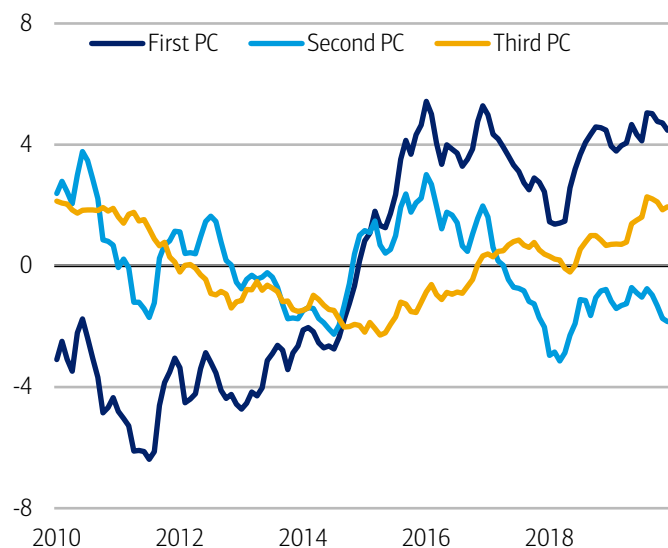
The next step is to use normalised data to run a principal component analysis (PCA) on MATLAB. We run PCA for two time periods: 1) January 2010-December 2019; and 2) January 2020-December 2023.

Principal component analysis returns the coefficients, also known as loadings, for the data matrix we defined. It also gives us the principal component scores, which are the representations of the data matrix in the principal component space. The rows of the score correspond to observations; in our case, the rows are a time series with monthly data. The columns of the score correspond to the components, which we call factors. The analysis also returns the percentage of the total variance explained by each principal component.

After that, we use factors to create a correlation matrix of principal components and macro as well as financial variables, which is presented in Exhibit 3 and Exhibit 4.

Exhibit 5: 2010-19: PC1 = DXY, PC2 = nominal global growth

PC3 most likely reflects idiosyncratic factors

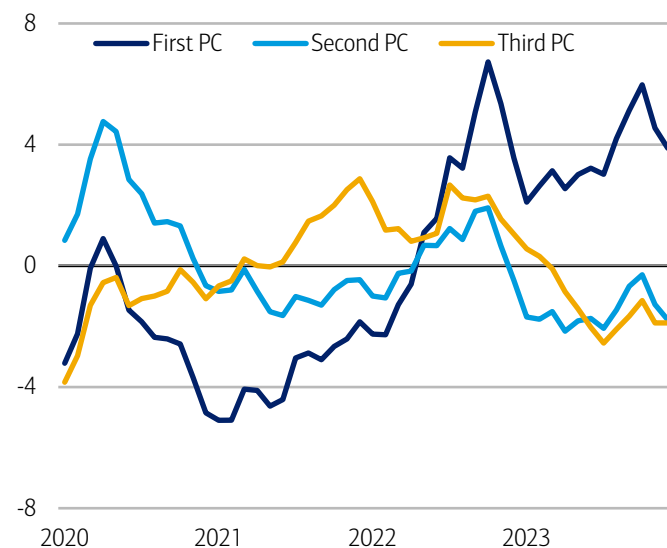


Source: Bloomberg, Haver, MATLAB, BofA Global Research

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Exhibit 6: 2020-23: PC1 = DXY, PC2=US rates + BAA credit spreads +VIX

PC3 most likely reflects idiosyncratic factors



Source: Bloomberg, Haver, MATLAB, BofA Global Research

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News and Views

Brazil: IGP-10 increased 0.42% mom in January

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IGP-10 inflation increased 0.42% mom in January (from 0.62% in December), just below market expectations at 0.46%, reaching -3.2% yoy (from -3.6%). Wholesale inflation was the main contributor increasing 0.42% mom (from 0.81% mom previously), while agriculture prices went up by 2.22% mom (vs 1.82%). Consumer prices rose by 0.46% mom (vs 0.22%), with the main upward pressure being Food (1.41%, from 0.40%, mainly due to perishable items). Meanwhile, construction inflation increased 0.39% mom (from 0.01%).

- **To follow:** We expect inflation acceleration in the beginning of 2024, mainly in annual metrics due to base-effect.

Brazil: Core retail sales rose by 0.1% momsa in November

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November Core Retail Sales increased by 0.1% momsa (from -0.3% momsa in October), in line with market expectations. Six out of the eight categories registered marginal gains, with office supplies and computers (18.6% momsa, vs -7.1%) being the main positive highlight. In yoy terms, sales were up by 2.2% yoy (from 0.2% yoy). Meanwhile, broad sales, which includes Building Materials, Vehicles and wholesale food items, were up by 1.4% momsa (from 0.5% in October) – above market expectations of 0.5% momsa increase. In yoy terms, Broad sales remained at 1.5% yoy.

- **To follow:** We expect deceleration in activity throughout the end of 2023. Our preliminary forecast for November's IBC-Br (Brazilian Central Bank monthly GDP proxy) is a 0.7% momsa decline.

Hungary: NBH to resume 100bp rate cut

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National Bank of Hungary (NBH) Deputy Governor Virag says that the central bank can resume cutting the base rate in 100bp steps in the next 1-3 months, adding that rates falling to “around 6-7 in the middle of the year is a very realistic path”. This explicit dovish bias follows the MPC's consideration of 100bp already in the December meeting (but eventually the MPC unanimously voted for -75bp), and is likely strengthened the recent downside surprise in December CPI (5.5% yoy from 7.9%).

- **Steeper cuts ahead:** We revise our rates forecasts accordingly to 100bp easing steps in the coming months and now expect the base rate at 6% by Jun 2024, from 10.75% currently. We think there is less focus by the NBH on the HUF strength from now on, as the government has a clear priority for growth. The easing cycle in the latter part of this year is likely to be more cautious and dependent on major central banks and regional trends. We thus pencil in 5.50% for the base rate by YE2024 and keep YE2025 at 4.0%, and will reassess this path after the 30 January rate decision.

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