LatAm FI & FX Strategy Viewpoint

Positioning ahead of economic regimes

Investors are turning focus to a recessionary environment

Investors appear increasingly concerned about the likelihood of a global recession, and LatAm is not an exception. With a deterioration of economic growth in the near-term horizon across most of the region, and more so following the recent financial strains, there is increasing investor interest in how to position ahead of these growth slowdowns. In this context, what would be the best asset classes to hold in anticipation of a recessionary environment?

First things first, let's identify recessions...

Unlike the NBER in the US, there is no reliable and widely accepted institution defining the beginning and end of recessions in LatAm. In practice, most analysts call a recession after two consecutive quarters of negative growth, which implies a significant lag. Using monthly economic activity data, we estimate a three-state Markov switching model to identify recessions close to real time in Brazil, Chile, Colombia, Mexico and Peru. The model endogenously assesses whether the economy is in a high-growth, low-growth, or recession regime, allowing us to infer when recessions take place, just as they begin.

Is LatAm in a recession?

In the current juncture, most of LatAm keeps evading the recessionary cannons of monetary policy tightening. Despite aggressive rate hikes, economic activity has generally been resilient in the region. Digging deeper, Chile seems to be the only LatAm country currently in a recession, which according to our gauge started in November. Brazil and Peru are in slowdown mode, but still growing. Mexico and Colombia seem to remain in the high-growth regime. According to our economist's forecasts, and our model, Brazil, Peru and Mexico will likely enter a recession later this year.

The (lack of) power of the yield curve

An avid reader will have a pressing question: what about the slope of the yield curve? Despite the power that the yield curve has to predict US recessions, it lacks predictive power in LatAm. A number of factors make the yield curve a less powerful signal to predict recessions in LatAm: data availability, weaker monetary policy transmission, shallower financial markets and more prevalent unforeseen idiosyncratic shocks.

Positioning to surf the cyclones in LatAm

We compute conditional returns across growth regimes to parse out the historical performance of different asset classes. Equities exhibit unambiguously negative Sharpe ratios during recessions across the region, indicating stocks still have room to fall after recessions begin. During recessions, all asset classes underperform in Chile and Colombia. Total FX returns are attractive in Brazil and Mexico on the back of high carry, and Peru given FX intervention. Meanwhile, rates tend to perform well in Mexico and Brazil, probably driven by the expectation of an aggressive easing cycle approaching.

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NBER = National Bureau of Economic Research

Refer to important disclosures on page 14 to 16.
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Investors are turning focus to a recessionary environment

Investors appear increasingly concerned about the likelihood of a global recession. With a deterioration of economic growth expected in the near-term across most of LatAm, and more so following the recent financial strains, there is increasing investor interest in how to position ahead of the expected slowdown in economic activity.

Unlike the NBER (National Bureau of Economic Research) in the US, there is no reliable and widely accepted institution defining the beginning and end of recessions in LatAm. In practice, most analysts call a recession after two consecutive quarters of negative GDP growth. Given the lag with which national GDP data are published, relying on the two-quarter rule implies that a recession will be called about three quarters into it. Sometimes, this may mean that the recession is already close to concluding. Therefore, relying on this rule severely limits the insights that one can draw in real time.

In LatAm, beyond the significant delay in publishing national account data, there is no widely accepted definition, even ex-post. With the exception of Mexico, where the Mexican Institute of Finance Executives set up a Business Cycle Dating Committee, countries in the region lack an institution determining the start and end of recessions. And while the OECD has made efforts to provide a recession indicator for some countries in LatAm, their episodes are far too long and tend to extend far beyond what any market participant would consider to be the end of the recession cycle.

First things first, let's identify recessions…

We propose a methodology to identify recessions close to real time across countries in LatAm (and beyond). We use monthly economic activity data to estimate a three-state Markov switching model. Given our assumption about the data-generating process, the model endogenously assesses whether the economy is in a high-growth, low-growth, or recession regime. This allows us to methodically identify recessions, just as they begin, based on what the model identifies as the most likely state of the economy.

The Markov switching model

We leverage academic literature and focus our attention on the Markov switching model developed by Hamilton (1989, 1990). This is a non-linear time series model that estimates probabilities about the state of the economy, which we can use to infer likely start and end dates to recessions. The general specification is as follows

$$y_t = \mu_{S_t} + \epsilon_t \qquad (1)$$

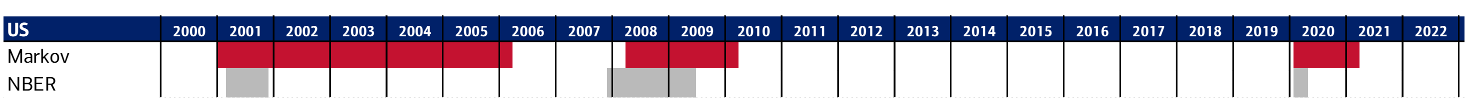
$$\epsilon_t \sim N\left(0, \sigma_{S_t}^2\right) \qquad (2)$$

$$p_{i,j} = \mathbb{P}\{S_t = j | S_{t-1} = i\}, \qquad i, j = 1, 2, \ldots \qquad (3)$$

where y_t is output at time t, S_t is the states of nature, $(\mu_{S_t}, \sigma_{S_t}^2)$ are the mean and variance of the error term ϵ_t for state S_t, and $p_{i,j}$ are the transition probabilities of the Markov process guiding the evolution of S_t. As shown by Hamilton, this model performs well for the US. Using just two states (high-growth and recession), the model identifies start dates for recessions that broadly align with the ex-post definitions of the NBER. However, it is typically late in calling the end of recessions (Exhibit 1). Overall, the US is characterized by stable growth that is sometimes interrupted by moderate recessions.

Exhibit 1: US recessions through the lens of the Markov switching model

The model identifies recessions timely, but tends to be late to call the conclusion, especially for the 2001 recession.



Source: BofA Global Research, Haver, Bloomberg

Note: Gray bars denote recessions as identified by the NBER, red bars denote recessions identified by the two-state Markov switching model.

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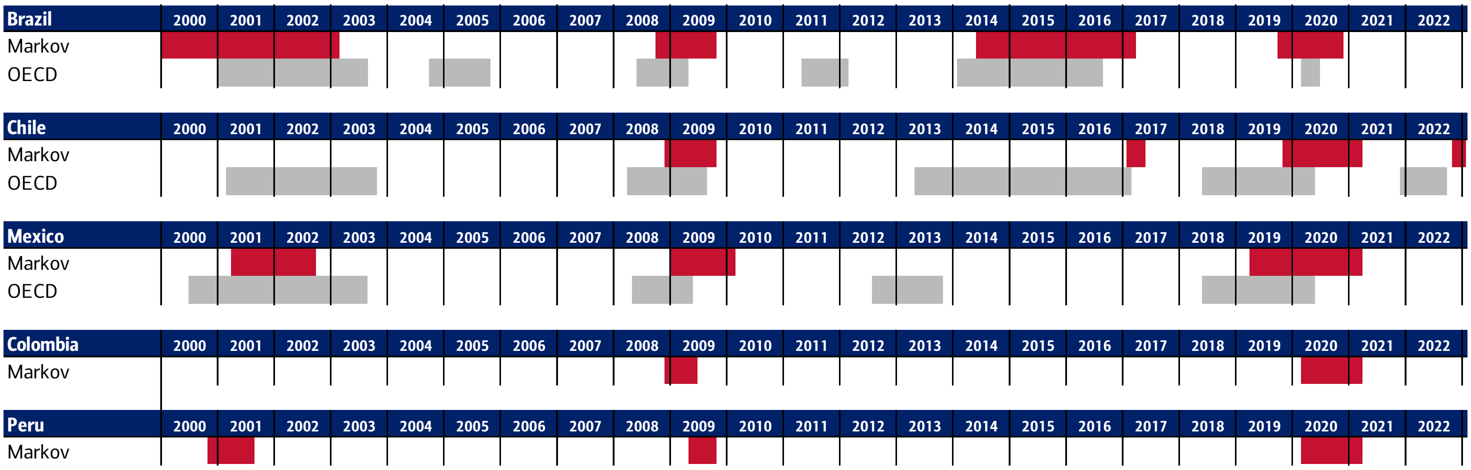
Exhibit 2: Recessions in LatAm through the lens of the Markov switching model

The Markov switching model identifies recessions well, even if it may be late in calling the end of each episode.



Source: BofA Global Research, Haver

Note: Gray bars denote recessions as identified by the OECD, when available. Red bars denote recessions identified by the three-state Markov switching model.

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LatAm has more cyclones than cycles

In LatAm, countries tend to exhibit much more pronounced cyclical behavior relative to the US. The region has experienced extended growth booms (e.g. commodity booms) that were then followed by busts. However, there have also been several extended periods when growth was be positive, but meager. This is in line with the findings of Aguiar and Gopinath (2007), who document that shocks to trend growth, rather than transitory fluctuations around a stable trend, are the primary source of output fluctuations in emerging markets.

A model with just two states, then, is not appropriate for LatAm, even though it tends to work quite well for the US. We modify the assumption on the Markov process to include three states of nature S_t: *high-growth*, *low-growth*, and *recession*. This parsimonious change gives us enough flexibility while preserving tractability.

We construct a monthly economic activity indicator for Brazil, Chile, Colombia, Mexico and Peru with monthly GDP indexes (IBC-Br, IMACEC, ISE, IGAE, and BCRP's indicator), between January 2000 (March 2001 for Colombia) and December 2022 (January 2023 in Chile). We choose this sample as it includes the largest countries in LatAm with developed local markets. To mute potential noise in the activity index, we calculate the 12-month moving average a_t at time t for each country,

$$a_t = \frac{1}{12}\sum_{i=1}^{12} x_{t+1-i}, \qquad (4)$$

where x_t is the respective monthly GDP index. We then compute quarter-on-quarter growth Δa_t as

$$\Delta a_t = 100\left(\frac{a_t}{a_{t-3}} - 1\right), \qquad (5)$$

which serves as input for the Markov switching model.

We estimate the model by maximum likelihood as in Hamilton (1994), and we use an expanding sample to avoid calling for stages of the economic cycle with data that is unavailable in real time. At each point in time, the model estimates the probability of the economy being in each of the three regimes, and we pick the most likely state.

We can compare the recession regimes we find to the indicator from the OECD (Exhibit 2). While the model seems quite precise in calling the beginning of the recessions, it lacks some precision to call their conclusion. Still, the overall fit is quite precise, and does not seem to show false positives—a flaw the OECD indicator seems to be prone to.

Exhibit 3: Mean and standard deviation across growth regimes
Peru has the highest volatility in recession/high-growth, then Colombia (recession), Brazil (high-growth)

Brazil	Average growth	Volatility
Overall	0.29	-
Recession	-0.78	0.36
Low-growth	0.77	0.09
High-growth	1.22	0.14

Mexico	Average growth	Volatility
Overall	0.43	-
Recession	-0.58	2.77
Low-growth	0.10	0.04
High-growth	1.30	0.02

Chile	Average growth	Volatility
Overall	0.91	-
Recession	-1.58	4.41
Low-growth	0.88	0.05
High-growth	1.43	0.07

Peru	Average growth	Volatility
Overall	1.10	-
Recession	-0.43	3.20
Low-growth	0.32	0.17
High-growth	1.63	0.18

Colombia	Average growth	Volatility
Overall	0.96	-
Recession	-1.13	2.65
Low-growth	0.62	0.07
High-growth	1.42	0.08

Source: BofA Global Research, Haver
Note: The table shows the estimates for the parameters of the three-state Marvok switching model as described in equations (1) and (2).
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Growth regimes in LatAm

We can use our model to gather stylized facts about economic growth in LatAm. Exhibit 3 shows the average growth and volatility that the model estimates for each growth regime in each country we study. Interestingly, Peru tends to show both the sharpest declines during recessions and the highest growth among high-growth regimes, followed by Colombia inn recessions and Brazil during high-growth regimes. Overall average growth has been highest in Peru, followed by Colombia, Chile, Mexico and Brazil, in that order. Brazil's lackluster performance is likely due to the very prolonged recession during Dilma Rousseff's administration. Interestingly, the recession regime exhibits, by a wide margin across all countries, the largest volatility for growth.

Using the estimated transition probabilities from the model, we can also look at the persistence of each growth regime (Exhibit 4). As expected, each growth regime is very persistent, with the estimated probability of being in the same state the following month always above 93%. In summary, since 200, our methodology identifies 4 recessions in Brazil; 3 in each of Chile, Mexico and Peru; and 2 in Colombia. Interestingly, our findings suggest that Chile is currently in a recession regime since last November.

Exhibit 4: Markov transition matrices
As expected, each growth regime is very persistent.

Brazil	Recession	Low-growth	High-growth
Recession	0.96	0.04	0.00
Low-growth	0.03	0.94	0.03
High-growth	0.00	0.07	0.93

Mexico	Recession	Low-growth	High-growth
Recession	0.96	0.00	0.04
Low-growth	0.01	0.95	0.04
High-growth	0.01	0.04	0.96

Chile	Recession	Low-growth	High-growth
Recession	0.94	0.03	0.03
Low-growth	0.02	0.94	0.04
High-growth	0.00	0.05	0.95

Peru	Recession	Low-growth	High-growth
Recession	0.93	0.00	0.07
Low-growth	0.01	0.95	0.04
High-growth	0.01	0.05	0.94

Colombia	Recession	Low-growth	High-growth
Recession	0.99	0.00	0.01
Low-growth	0.00	0.96	0.04

Exhibit 4: Markov transition matrices

As expected, each growth regime is very persistent.

High-growth	0.01	0.03	0.97

Source: BofA Global Research, Haver

Note: The table shows the estimates for the transition probabilities of the three-state Marvok switching model as described in equation (3).

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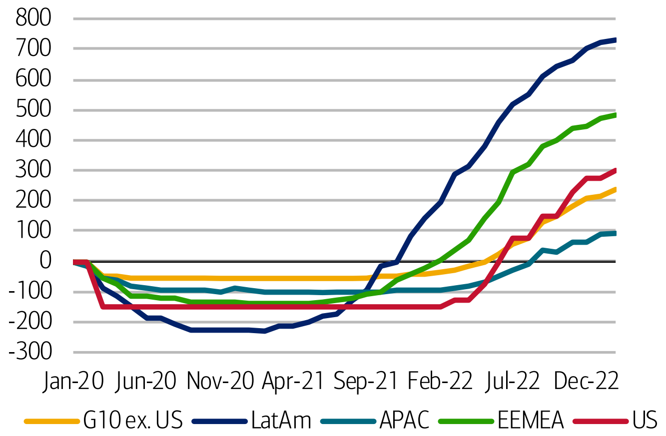
Exhibit 5: Policy rate hikes since the start of 2020 (bp, regional avg)

LatAm has embarked on the most aggressive hiking cycle



Source: BofA Global Research, Bloomberg

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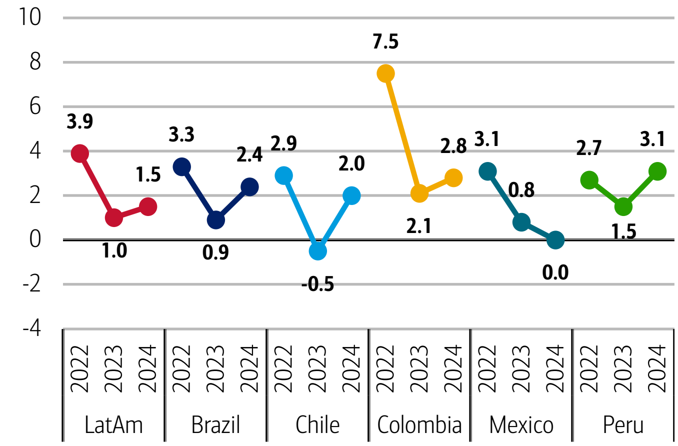
Exhibit 6: GDP growth forecasts in LatAm (%)

We expect a significant slowdown in Mexico and Chile



Source: BofA Global Research

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Is LatAm in a recession?

One of the biggest concerns for investors is whether the global economy is headed for a recession in 2023. This question is particularly relevant for LatAm, as it was the region that embarked on the most aggressive hiking cycle in the world to contain historically high inflation (Exhibit 5). Not only that, but LatAm has a large sensitivity to US and China growth. A potential recession in the US on the back of hawkish Fed policy could have negative implications for economic growth in LatAm.

Our economists are currently forecasting economic activity to slow down significantly in in the region. Specifically, we see LatAm GDP growing only 1.0% in 2023, below the 3.9% expected for 2022. As of now, we do not expect a recession in Brazil, Colombia, and Peru, but expect a significant slowdown in Mexico and Chile (Exhibit 6).

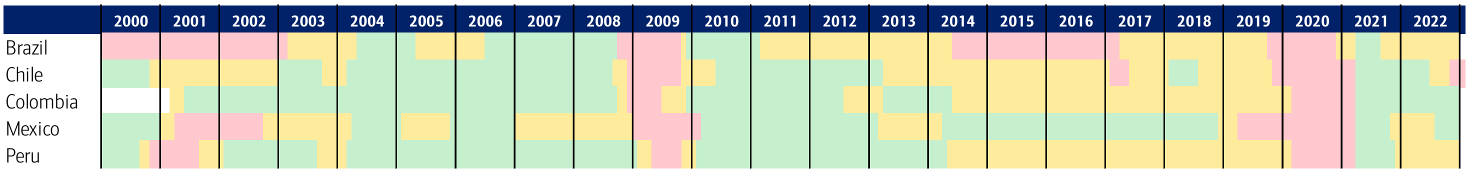
While our forecasts provide a forward-looking approach, our Markov switching model allows us to construct a higher-frequency estimation of the underlying state of the economy. Put simply, our model can be used to statistically infer whether an economy is in a high-growth, low-growth, or recession regime. This information is useful for two reasons. First, one regime can provide useful information about the likelihood that the economy transitions to a different regime. Second, asset prices can behave differently in the different regimes, so having information about the current regime could have important asset pricing implications that could be exploited by investors.

Chile: Houston, we have a recession

At this time, our model suggests Chile is the only country in the region that has already entered a recession (Exhibit 7). In fact, the model has been pointing to Chile being in a recession regime since November 2022.

Exhibit 7: Economic regimes in LatAm

Our model suggests a recession in Chile. Brazil and Peru are in the low-growth regime, while Mexico and Colombia are in the high-growth regime



Source: BofA Global Research, Haver.

Note: Green, yellow, and red denote high-growth, low-growth, and recession regimes, respectively, as identified by the three-state Markov switching model. Data for Colombia is unavailable before March 2001. At the time of publication, Chile is the only country where data is available for January 2023.

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Overall, this is consistent with our economist's view that Chile is on track for a mild recession in 2023. The central bank delivered the second most aggressive hiking cycle in LatAm, only behind Brazil. The policy rate increased by 1,075bp since the start of the cycle, putting significant pressure on economic activity. On top of this, the economy has faced a significant drag from the removal of fiscal stimulus introduced during the pandemic and policy uncertainty that has affected investment. As such, our economist expects Chilean GDP to contract about 0.5% in 2023, compared to 2.9% growth in 2024.

Warning signs in Brazil and Peru

Our model places Brazil in a low-growth regime, ruling out a recession for now despite the strong deceleration in economic activity. This is consistent with the expectation from our economics team that growth will keep slowing down on the back of the lagged impact of tight monetary policy, but a better-than-expected harvest will support activity in 2Q23 and help Brazil avoid a recession for now. Brazil embarked on the most aggressive hiking cycle in the region, increasing the policy rate by 1,175bp since early 2021 to combat the largest inflation shock in almost 20 years. As a result, economic activity is already showing a gradual deceleration, with the monthly GDP proxy (IBC-Br) growing only 1.4% yoy in December 2022, well below the 5.7% yoy peak in August 2022.

Our model shows Peru in a low-growth regime. This is consistent with an economy that has been operating under constant political turmoil. Growth has been hit by persistent political noise that has affected copper production, limited investment and disrupted nationwide supply chains. In fact, we recently updated our GDP growth forecast for 2023 from 2.1% to 1.5%, amid the impact of arguably the most severe social protests in the last 49 years, and we expect 1Q23 to post a quarter-over-quarter contraction of 1%.

Colombia and Mexico do not appear to be in danger… for now

After the pandemic, Colombia's economy remained strongly overheated. In fact, we see Colombia as the fastest-growing economy in LatAm during 2022, with GDP rising roughly 7.5% in 2022. This is significantly above the 3.9% average growth in LatAm. The overheating has been largely explained by strong domestic consumption. Consistent with this evidence, our model shows Colombia remains in a high-growth regime. While we have seen a gradual deceleration in activity due to the lagged impact of tighter monetary policy, the model shows Colombia still far from a recession. We expect GDP to grow about 2.1% in 2023, a strong deceleration but not close to a recession.

After a brief period in a low-growth regime, Mexico is now back in a high-growth regime, according to our model. In our view, this rebound in economic activity is likely driven by a boost from construction in 2H22, mostly due to the government's big projects (Maya train, Dos Bocas refinery). Continued resilience of the US economy is also supporting the Mexican economy. While a potential downturn in US economic activity could put pressure on economic activity in Mexico, we see GDP growing about 0.8% in 2023.

The (lack of) power of the yield curve

After identifying recessions in LatAm, an investor may wonder if it is possible to make any forward-looking inference about the likelihood that each economy could enter a recession in the future. One alternative would be to apply the transition probabilities in Exhibit 4 conditional on the current regime. Unfortunately, this has the shortcoming of only considering the reduced form regime identified by the model, while abstracting from anything else. For example, it would not consider the current monetary or fiscal policy stance, nor any other data that a growth forecast would typically build upon.

Another natural approach would be to analyze whether the slope of the yield curve provides useful information about recessions. After all, this is true for the US, where a yield curve inversion has preceded economic downturns for decades. In fact, the NY Fed publishes an estimate of the recession probability over the next 12 months by running a simple regression of the NBER recession indicator on the 3m10y slope of the yield curve. Large jumps in this indicator tend to be fairly accurate at predicting recessions.

What works in the US does not work in LatAm

Unfortunately, the same is not the case for LatAm. Using the results of our Markov switching model and the slope of the local yield curve under a similar simple regression framework provides very noisy probabilities. Even controlling for the slope of the US yield curve, the resulting probabilities remain highly volatile and uninformative.

In our view, several factors could explain why the slope of the yield curve in LatAm carries little informational value about potential recessions. First, data availability is a significant hurdle, as we have much less historical data of local curves in LatAm than in the US. Second, monetary policy transmission in LatAm is significantly weaker compared to the US, which could mean market-implied rate expectations are less connected to the economic cycle. Third, financial markets are shallower in LatAm, which could make the signal-to-noise ratio of LatAm assets lower than in the US. Finally, growth is more unstable, as unforeseen idiosyncratic shocks are more prevalent in LatAm than in the US.

But we can leverage our economists' forecasts

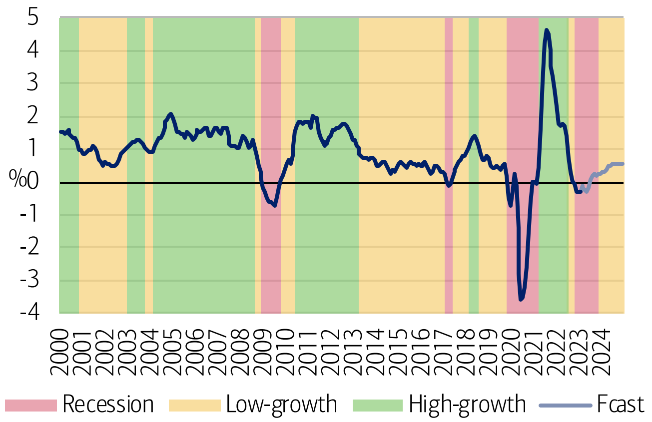
While the yield curve provides very little power to anticipate recessions, we can use our Markov switching model, coupled with our Economics team's forecasts, to determine if and when countries in LatAm could enter a recession. Our approach is simple. We assume that the economic activity forecasts from our economists materialize in the future to construct a forecast for our regressor Δa_t. We then run our Markov switching model to this extended dataset. This allows us to determine the economic regime of each economy that is implied by our economist's point-estimates of economic activity.

Beware… recession could be coming

Besides Chile, which our model is already flagging to be in a recession (Exhibit 8), our framework shows that most of LatAm will likely go through a recession in 2023. We expect Peru to be the first case, potentially as early as February. Protests, including roadblocks, destruction of public infrastructure, attempts to seize airports, attacks on mining camps, and clashes with the police in urban areas, have been suppressing economic activity between mid-December and February.

With Peru in low-growth territory and the economy slowing, entering the recession regime seems highly likely (Exhibit 9). On the positive side, the recession in Peru could be on track to be relatively shallow and short-lived, particularly given that protests have diminished substantially.

Exhibit 8: Chile economic regimes
Chile is already in a recession according to our model



Source: BofA Global Research, Haver
Note: The dark blue line denotes qoq growth as defined in equation (5). The light blue line is constructed assuming our economist's forecasts materialize.

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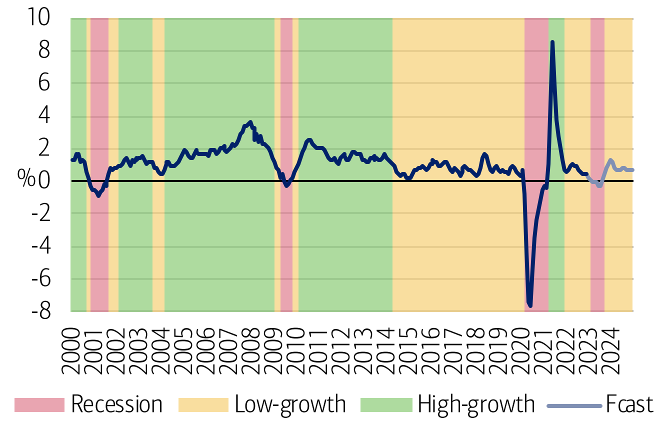
Exhibit 9: Peru economic regimes
Peru likely entered a recession in February 2023



Source: BofA Global Research, Haver
Note: The dark blue line denotes qoq growth as defined in equation (5). The light blue line is constructed assuming our economist's forecasts materialize.

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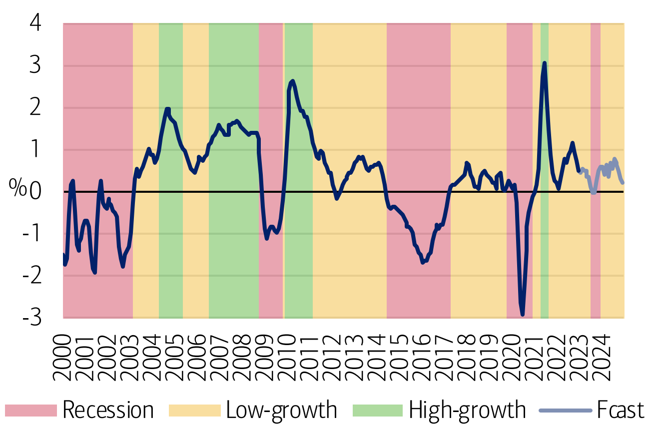
Exhibit 10: Brazil economic regimes
Our model suggests Brazil could enter a recession in July 2023



Source: BofA Global Research, Haver
Note: The dark blue line denotes qoq growth as defined in equation (5). The light blue line is constructed assuming our economist's forecasts materialize.

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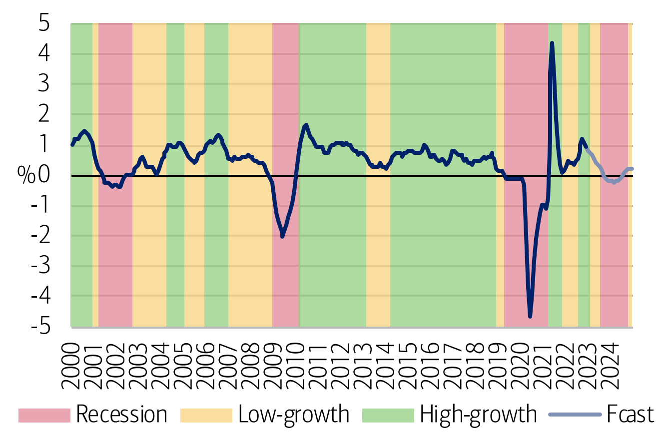
Exhibit 11: Mexico economic regimes
Mexico seems to be heading into a recession regime in 3Q23



Source: BofA Global Research, Haver
Note: The dark blue line denotes qoq growth as defined in equation (5). The light blue line is constructed assuming our economist's forecasts materialize.

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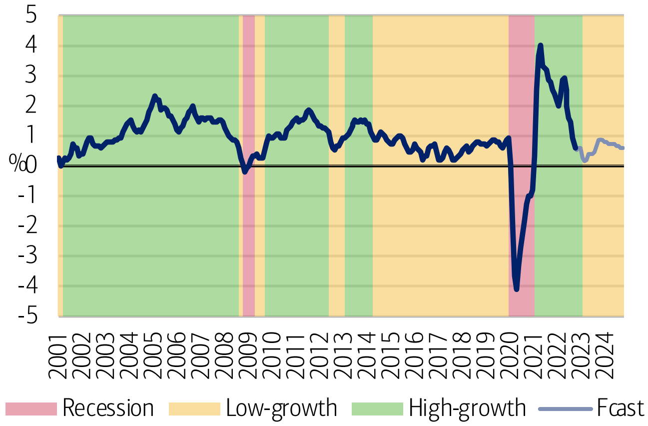
Next in line is Brazil, which we expect will enter a quick short-lived recession by July (Exhibit 10). In our view, this will be largely driven by the effects of aggressive monetary tightening, a global deceleration, and shrinking credit concessions. With Brazil currently in a low-growth regime, the likelihood of a recession is relatively high. Still, it could be relatively shallow, on the back of the Chinese reopening and a pickup in commodity demand that could boost Brazilian exports.

Finally, our model is also pointing to a recession in Mexico, despite it currently being in a high-growth regime (Exhibit 11). The recession would likely begin during 3Q23, most likely on the back of the mild recession that our US economics team is penciling-in for the US. Historically, the Mexican economy tends to have a larger beta to the US compared to the rest of the region. Therefore, we may expect a relatively deeper recession in Mexico than in the rest of the economies in LatAm. Finally, our model is also pointing to a more protracted recession, which could extend through at least 3Q24.

Exhibit 12: Colombia economic regimes
Colombia seems likely to avoid a recession in 2023 and 2024



Source: BofA Global Research, Haver
Note: The dark blue line denotes qoq growth as defined in equation (5). The light blue line is constructed assuming our economist's forecasts materialize.

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Just a slowdown in Colombia

The only exception in the region is Colombia, where our model suggests the economy will only go through a low-growth regime, but not enter a recession (Exhibit 12). While monetary tightening will likely take a toll on growth, the starting point in Colombia is a very overheated economy. However, this does imply that Colombia will have a tougher time bringing inflation back to target. We expect inflation will only decline to 7.7% by 2023-end and 5.4% by 2024-end, significantly above the 3% target.

Positioning to surf the cyclones in LatAm

While identifying recession is interesting, most investors would be more eager to know how asset returns behave around the macroeconomic cycle. We use our Markov switching model to analyze historical returns across asset classes conditional on the Markov state. We focus on total FX returns, decomposed in spot return and carry, as well as equity excess returns using benchmark indexes, and returns on proprietary BofA bond indexes. For each asset class, we also compute the conditional volatility of returns, as well as the conditional Sharpe ratio.

Exhibit 13: Conditional asset returns, volatility, and Sharpe ratios
Statistics are conditional on the Markov state for recession, low-growth, and high-growth regimes.

Brazil	FX Total	FX Spot	FX Carry	LDM	Equities
Recession					
Annualized returns	10%	0%	10%	12%	-14%
Annualized volatility	15%	15%	6%	27%	37%
Sharpe ratio	0.69	-0.01	1.77	0.43	-0.37
Low-growth					
Annualized returns	3%	-4%	7%	1%	20%
Annualized volatility	20%	19%	4%	16%	41%
Sharpe ratio	0.15	-0.21	1.57	0.08	0.49
High-growth					
Annualized returns	6%	-2%	8%	15%	45%
Annualized volatility	18%	16%	4%	18%	30%
Sharpe ratio	0.36	-0.11	2.12	0.83	1.51

Mexico	FX Total	FX Spot	FX Carry	LDM	Equities
Recession					
Annualized returns	4%	0%	5%	9%	-5%
Annualized volatility	8%	8%	2%	11%	31%
Sharpe ratio	0.58	-0.03	2.67	0.80	-0.16
Low-growth					
Annualized returns	0%	-4%	5%	3%	10%
Annualized volatility	13%	12%	2%	11%	29%
Sharpe ratio	0.03	-0.37	2.10	0.27	0.36
High-growth					
Annualized returns	1%	-3%	4%	4%	15%
Annualized volatility	8%	7%	2%	12%	25%
Sharpe ratio	0.13	-0.46	1.87	0.34	0.62

Chile	FX Total	FX Spot	FX Carry	LDM	Equities
Recession					
Annualized returns	-2%	-3%	1%	-3%	-12%
Annualized volatility	11%	11%	2%	18%	29%

Peru	FX Total	FX Spot	FX Carry	LDM	Equities
Recession					
Annualized returns	2%	2%	1%	-14%	-13%
Annualized volatility	4%	2%	2%	6%	32%

Exhibit 13: Conditional asset returns, volatility, and Sharpe ratios

Statistics are conditional on the Markov state for recession, low-growth, and high-growth regimes.

Brazil					
Sharpe ratio	-0.23	-0.32	0.50	-0.15	-0.40
Low-growth					
Annualized returns	3%	1%	2%	1%	-2%
Annualized volatility	10%	10%	2%	9%	31%
Sharpe ratio	0.28	0.09	0.91	0.12	-0.06
High-growth					
Annualized returns	0%	-2%	2%	1%	19%
Annualized volatility	11%	12%	2%	12%	22%
Sharpe ratio	0.04	-0.14	0.98	0.07	0.88

Mexico					
Sharpe ratio	0.67	0.66	0.32	-2.22	-0.40
Low-growth					
Annualized returns	1%	-2%	3%	6%	15%
Annualized volatility	6%	5%	2%	11%	33%
Sharpe ratio	0.10	-0.46	1.27	0.51	0.46
High-growth					
Annualized returns	3%	1%	2%	-1%	24%
Annualized volatility	7%	6%	3%	11%	37%
Sharpe ratio	0.39	0.09	0.75	-0.05	0.65

Colombia					
	FX Total	FX Spot	FX Carry	LDM	Equities
Recession					
Annualized returns	-2%	-4%	2%	-5%	-28%
Annualized volatility	10%	10%	1%	12%	18%
Sharpe ratio	-0.17	-0.36	1.84	-0.38	-1.54
Low-growth					
Annualized returns	-2%	-5%	3%	-1%	0%
Annualized volatility	9%	8%	2%	15%	27%
Sharpe ratio	-0.18	-0.57	1.72	-0.05	0.01
High-growth					
Annualized returns	5%	1%	4%	0%	40%
Annualized volatility	15%	14%	3%	15%	44%
Sharpe ratio	0.32	0.06	1.41	-0.01	0.91

Source: BofA Global Research, Haver

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For equities, we look at the USD (unhedged) returns in MSCI indexes, which track the performance of large- and mid-cap segments of each country's equity market. For local bonds, we focus on USD (unhedged) returns using or proprietary BofA ICE bond indexes, which track the performance of sovereign local currency bonds across different maturities (market weighted). We have included a detailed list in the Annex.

Exhibit 13 shows the conditional average returns, volatility, and Sharpe ratios across asset classes for each regime: *high-growth*, *low-growth*, and *recession*. Most asset classes exhibit negative returns during recessions. On the other hand, equities tend to exhibit the highest Sharpe ratio during high-growth regimes, consistent with equity returns being highly related to growth.

This may be an intuitive but not a trivial one. In fact, while risk premium should unambiguously be detrimental for risk assets in a recessionary environment, different combinations of monetary and fiscal policy could tilt returns in either direction. For example, if an aggressive monetary easing cycle was in the horizon, increasing investor positioning in receivers would likely make rates rally.

Interestingly, total FX returns are positive in Brazil and Mexico during recession regimes, likely a reflection of an attractive carry prevailing over changes in risk premium. Peru also exhibits positive returns during recession regimes, in this case likely driven by frequent FX interventions. Rates also tend to perform well in Mexico and Brazil during recession regimes, probably driven by the expectation of an aggressive easing cycle approaching, also outweighing the potential deterioration in risk sentiment.

Equities unambiguously have their worst performance during recessions, indicating stocks still have room to fall after recessions begin, perhaps reflecting that markets wait until recessions have begun to fully price them in. In Chile and Colombia, all assets underperform during recessions, which may indicate that the deterioration in risk premium may outweigh any benefit coming from an expected turn in monetary policy.

During high-growth regimes, in contrast, equities show all their shine, while local rates only remain attractive in Brazil and Mexico. Total FX returns tend to be positive, but with relatively low Sharpe ratio and they underperform relative to equities. During low-growth regimes, in turn, most asset classes across countries have low but positive Sharpe Ratios. Equities tend to offer the best risk reward in Brazil and Mexico, while LDM looks like the best asset class in Peru, and FX seems the most attractive asset class in Chile.

Digging deeper, we look for potential differences in the behavior of asset returns depending on the phase within the economic cycle. We subdivide each regime between months when our activity indicator is expanding ($\Delta a_t > 0$) and periods when our activity indicator is contracting ($\Delta a_t \leq 0$). These results are shown in Exhibit 14.

By splitting between expansionary and contractionary periods within the Markov regime, we can find some heterogeneity. For example, equity Sharpe ratios are historically very negative during recession regimes. However, when the activity indicator starts trending up within a recession regime, the Sharpe ratio is just mildly negative. This is consistent with our previous results, as a possible turn towards more expansionary policies is likely to become more pronounced heading into the later stages of the recessionary cycle.

Moreover, when the activity indicator is going up within a high-growth regime, the Sharpe ratio of most asset classes across countries is higher than when the activity indicator is trending down, as risk sentiments tends to prevail over the likelihood of policy tightening in the horizon. Finally, asset classes seem less reactive to the direction of the activity indicator during low-growth regimes.

Overall, according to our analysis, if investors have high conviction about a recession approaching in the near term, historical data suggests they should be long FX in Brazil, Mexico, and Peru, and be long LDM in Brazil and Mexico. In contrast, the same data suggest they should stay away of Chilean and Colombian assets ahead of a recession.

Exhibit 14: Conditional asset returns, volatility, and Sharpe ratios

Statistics are conditional on the Markov state for recession, low-growth, and high-growth regimes.

Brazil	FX Total	FX Spot	FX Carry	LDM	Equities
Recession Up					
Annualized returns	6%	-4%	9%	13%	-2%
Annualized volatility	14%	15%	5%	22%	42%
Sharpe ratio	0.40	-0.24	1.85	0.56	-0.04
Recession Down					
Annualized returns	14%	3%	11%	11%	-23%
Annualized volatility	14%	15%	6%	31%	31%
Sharpe ratio	1.01	0.20	1.77	0.36	-0.76
Low-growth Up					
Annualized returns	4%	-3%	7%	1%	19%
Annualized volatility	20%	19%	5%	17%	41%
Sharpe ratio	0.22	-0.16	1.63	0.06	0.47
Low-growth Down					
Annualized returns	1%	-5%	7%	2%	21%
Annualized volatility	20%	19%	4%	14%	41%
Sharpe ratio	0.07	-0.27	1.50	0.11	0.51
High-growth Up					
Annualized returns	4%	-4%	8%	21%	55%
Annualized volatility	15%	14%	4%	16%	29%
Sharpe ratio	0.27	-0.27	1.76	1.27	1.88
High-growth Down					
Annualized returns	8%	0%	9%	9%	35%
Annualized volatility	20%	19%	3%	17%	27%
Sharpe ratio	0.43	0.00	2.59	0.51	1.32

Mexico	FX Total	FX Spot	FX Carry	LDM	Equities
Recession Up					
Annualized returns	3%	-1%	4%	7%	7%
Annualized volatility	8%	8%	2%	10%	34%
Sharpe ratio	0.39	-0.15	2.84	0.74	0.22
Recession Down					
Annualized returns	5%	1%	5%	10%	-15%
Annualized volatility	7%	7%	2%	12%	22%
Sharpe ratio	0.79	0.08	2.59	0.85	-0.69
Low-growth Up					
Annualized returns	-1%	-6%	5%	4%	19%
Annualized volatility	12%	11%	2%	8%	30%
Sharpe ratio	-0.06	-0.50	2.09	0.53	0.63
Low-growth Down					
Annualized returns	1%	-4%	5%	2%	4%
Annualized volatility	13%	13%	2%	13%	26%
Sharpe ratio	0.09	-0.28	2.08	0.17	0.17
High-growth Up					
Annualized returns	1%	-4%	5%	4%	16%
Annualized volatility	8%	8%	3%	12%	27%
Sharpe ratio	0.11	-0.47	1.78	0.38	0.59
High-growth Down					
Annualized returns	1%	-3%	4%	3%	14%
Annualized volatility	7%	7%	2%	12%	22%
Sharpe ratio	0.12	-0.47	2.13	0.30	0.64

Chile					
Recession Up					
Annualized returns	-5%	-7%	2%	-8%	-2%
Annualized volatility	8%	7%	2%	18%	35%
Sharpe ratio	-0.71	-1.02	0.93	-0.43	-0.07
Recession Down					
Annualized returns	0%	0%	0%	3%	-19%
Annualized volatility	12%	12%	1%	15%	23%
Sharpe ratio	-0.01	-0.03	0.09	0.22	-0.81
Low-growth Up					
Annualized returns	2%	0%	2%	2%	3%
Annualized volatility	9%	9%	2%	9%	33%
Sharpe ratio	0.19	-0.01	1.04	0.26	0.08
Low-growth Down					
Annualized returns	4%	2%	2%	0%	-6%

Peru					
Recession Up					
Annualized returns	4%	2%	1%	-17%	-2%
Annualized volatility	3%	2%	1%	4%	39%
Sharpe ratio	1.16	0.93	0.90	-3.93	-0.05
Recession Down					
Annualized returns	1%	1%	0%	-8%	-24%
Annualized volatility	3%	2%	3%	4%	16%
Sharpe ratio	0.27	0.37	0.15	-2.19	-1.48
Low-growth Up					
Annualized returns	2%	-1%	3%	6%	15%
Annualized volatility	6%	5%	2%	11%	33%
Sharpe ratio	0.28	-0.22	1.39	0.59	0.47
Low-growth Down					
Annualized returns	0%	-3%	3%	5%	15%

Exhibit 14: Conditional asset returns, volatility, and Sharpe ratios

Statistics are conditional on the Markov state for recession, low-growth, and high-growth regimes.

Brazil					
Annualized volatility	10%	11%	2%	9%	29%
Sharpe ratio	0.35	0.18	0.81	-0.02	-0.20
High-growth Up					
Annualized returns	0%	-1%	2%	1%	19%
Annualized volatility	11%	11%	2%	14%	22%
Sharpe ratio	0.04	-0.12	0.86	0.05	0.87
High-growth Down					
Annualized returns	1%	-2%	3%	1%	19%
Annualized volatility	12%	12%	2%	9%	22%
Sharpe ratio	0.07	-0.14	1.11	0.09	0.87

Mexico					
Annualized volatility	6%	4%	2%	12%	33%
Sharpe ratio	-0.06	-0.71	1.18	0.43	0.44
High-growth Up					
Annualized returns	2%	1%	2%	2%	34%
Annualized volatility	7%	7%	3%	12%	39%
Sharpe ratio	0.34	0.10	0.63	0.15	0.87
High-growth Down					
Annualized returns	3%	0%	2%	-3%	14%
Annualized volatility	6%	6%	3%	10%	32%
Sharpe ratio	0.44	0.07	0.86	-0.27	0.42

Colombia					
Recession Up					
Annualized returns	-4%	-6%	2%	-11%	-26%
Annualized volatility	11%	11%	1%	8%	19%
Sharpe ratio	-0.34	-0.51	1.56	-1.28	-1.34
Recession Down					
Annualized returns	2%	0%	2%	9%	-33%
Annualized volatility	7%	7%	1%	10%	17%
Sharpe ratio	0.32	0.03	3.72	0.88	-1.93
Low-growth Up					
Annualized returns	-3%	-6%	3%	-1%	6%
Annualized volatility	9%	8%	2%	13%	28%
Sharpe ratio	-0.39	-0.82	1.52	-0.09	0.23
Low-growth Down					
Annualized returns	1%	-2%	3%	0%	-6%
Annualized volatility	9%	8%	2%	17%	25%
Sharpe ratio	0.09	-0.29	2.02	-0.01	-0.24
High-growth Up					
Annualized returns	2%	-1%	3%	3%	42%
Annualized volatility	13%	13%	3%	11%	42%
Sharpe ratio	0.19	-0.09	1.28	0.30	1.01
High-growth Down					
Annualized returns	7%	3%	4%	-4%	37%
Annualized volatility	15%	15%	3%	18%	45%
Sharpe ratio	0.45	0.20	1.56	-0.22	0.81

Source: BofA Global Research, Haver

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Annex

Exhibit 15: Data sources

Tickers, description, and sources used

Ticker	Description	Source
S223GVI@EMERGELA	IBC-BR economic activity indicator	Haver
S228GVI@EMERGELA	IMACEC economic activity indicator	Haver
S233GVI@EMERGELA	ISE economic activity indicator	Haver
S273GVI@EMERGELA	IGAE economic activity indicator	Haver
S293GVI@EMERGELA	Monthly GDP index	Haver
N223RTAR@EMERGE	Brazil: Interest Rate: Selic - Target Rate (EOP, %)	Haver
N228RTAR@EMERGE	Chile: Monetary Policy Rate (EOP, %)	Haver
N233RTAR@EMERGE	Colombia: BDLR Intervention Rate: Minimum Liquidity Expansion Rate (EOP, %)	Haver
N273RI1@EMERGE	Mexico: Interest Rates: Interbank Equilibrium, 28 Day TIIE (Avg, %)	Haver
N293RC@EMERGE	Peru: Interbank Interest Rate, Domestic Currency (Avg %)	Haver
FFEDTARE@USECON	Federal Open Market Committee: Fed Funds Target Rate (EOP, %)	Haver
NDUEBRAF Index	Brazil Total Equity Returns (USD, unhedged)	Bloomberg
NDEUSCH Index	Chile Total Equity Returns (USD, unhedged)	Bloomberg
NDEUSCO Index	Colombia Total Equity Returns (USD, unhedged)	Bloomberg
NDEUMXF Index	Mexico Total Equity Returns (USD, unhedged)	Bloomberg
M1PE Index	Peru Total Equity Returns (USD, unhedged)	Bloomberg
FEDL01 Index	US Federal Funds Effective Rate	Bloomberg
G0BR	BofA ICE Brazil Local Debt (USD, unhedged)	Bloomberg
G0CL	BofA ICE Chile Local Debt (USD, unhedged)	Bloomberg
G0CO	BofA ICE Colombia Local Debt (USD, unhedged)	Bloomberg
G0MX	BofA ICE Mexico Local Debt (USD, unhedged)	Bloomberg
G0PE	BofA ICE Peru Local Debt (USD, unhedged)	Bloomberg
USDBRL Curncy	Brazilian Real	Bloomberg
USDCLP Curncy	Chilean Peso	Bloomberg
USDCOP Curncy	Colombian Peso	Bloomberg
USDMXN Curncy	Mexican Peso	Bloomberg
USDPEN Curncy	Peruvian Sol	Bloomberg
BCNI3M CMPN Curncy	Brazil 3m implied yield	Bloomberg
CHNI3M CMPN Curncy	Chile 3m implied yield	Bloomberg
CLNI3M CMPN Curncy	Colombia 3m implied yield	Bloomberg
MXNI3M CMPN Curncy	Mexico 3m implied yield	Bloomberg
PSNI3M CMPN Curncy	Peru 3m implied yield	Bloomberg
USSWCV1 CMPN Curncy	US 3m swap rate	Bloomberg

Source: BofA Global Research

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