

FX Viewpoint

Vol-guided decisions

Key takeaways

- Options data helps to decide whether to follow or to fade spot price trends.
- With calibrated parameters, our options-derived strategies outperform in both up and down trends.

Capture directional information from options

Once a trend forms in FX spot price, investors often have different opinions on whether the trend should be pursued or faded. Refreshing our Event analysis model, we use a combination volatility term structure and front-end skew to extract signals.

Given the current spot trend could be positive or negative and the overall option signal could be positive (bullish) or negative (bearish) as well, we derive four strategies (Exhibit 2). Through a review, we determine thresholds of the volatility parameters to be used for each strategy. Signals generated from these thresholds could produce hit ratios that are above 50% for all four strategies both in the long run and in more recent years since 2018 (Exhibit 1).

Exhibit 1: Summary of updated parameters and performance

Recalibrated parameters and performance using historical data from 2008-2020

Strategy	Spot Return	1m vol chg	1y vol chg	1y vol chg - 1m vol chg	1m skew/ATM vol	Hit Ratio	Hit Ratio since 2018
Bearish Continuation	Decline by more than 1%	Greater than 0.5	Greater than 0	n/a	Decline by more than 2%	57%	57%
Bearish Contrarian	Rise by more than 1%	n/a	n/a	n/a	Decline by more than 2%	61%	84%
Bullish Continuation	Rise by more than 2%	n/a	n/a	< -0.1	Rise by more than 2%	53%	51%
Bullish Contrarian	Decline by more than 1%	< -0.2	n/a	n/a	Rise by more than 1%	57%	72%

Source: BofA Global Research

The Event analysis model uses recalibrated parameter thresholds and the back-tested performance presented is hypothetical in nature and reflects application of the model to its inception date as if the model had been in existence at that time. It is not intended to be an indicative of actual or future performance. The actual performance of this model may vary significantly from the back-tested performance.

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18 March 2021

G10 FX Strategy
Global

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Using FX vol as signals for spot

Revisiting our [Event analysis model](#) from weekly [FX Quant Trader](#), we look for information from the FX options market that could signal whether spot trends should be followed or faded.

Given weekly spot price movements in FX, we use a combination of 1m ATM vol, 1y ATM vol, and 1m 25-delta skew (as % of atm) to determine whether price action for the subsequent week is positive or negative. In doing so, there are four scenarios (Exhibit 2). We calibrate the preferred levels to be used from option instruments to achieve a favorable and robust hit ratio for each scenario in our backtesting of 16 currencies from 2008 to 2020.

Exhibit 2: Four trading strategies derived from four scenarios about spot and vol

Make decisions for next week based on spot and vol trends in current week

Current Week	Next Week	
	Depreciation	Appreciation
	Depreciation	Appreciation
Depreciation	Bearish Continuation	Bullish Contrarian
Appreciation	Bearish Contrarian	Bullish Continuation

Source: BofA Global Research

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Strategy 1: Bearish continuation

Rise in vol curve signal spot has more room to fall

After spot price has already declined since the previous week, we update levels for each volatility parameter to improve hit ratio for the following week. This strategy has a steady hit ratio of 57% both since 2008 and in more recent history, using the thresholds below (Exhibit 3).

Exhibit 3: Updated levels for bearish continuation strategy

Bearish continuation strategy has long term hit ratio of 57%

Strategy	Spot Return	1m vol chg	1y vol chg	1m skew/ATM vol	Hit Ratio	Hit Ratio since 2018
Bearish Continuation	Decline by more than 1%	Greater than 0.5	Greater than 0	Decline by more than 2%	57%	57%

Source: BofA Global Research. We calculate *hit ratio* as number of signals returned positive divided by total number of signals. Back-tested performance presented is hypothetical in nature and reflects application of the model to its inception date as if the model had been in existence at that time. It is not intended to be an indicative of actual or future performance. The actual performance of this model may vary significantly from the back-tested performance.

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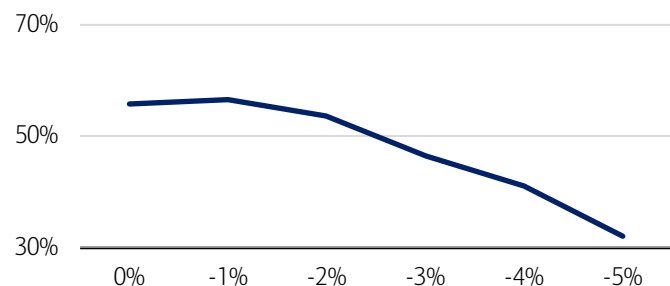
Sensitivity of the hit ratio to parameter changes

For each of the option instrument used in the analysis, Exhibit 4 to Exhibit 7 shows sensitivity of hit ratio to changes in the level of parameter. For spot return, 1m vol, and 1y vol, the baseline levels work well. In the case of 1m skew, hit ratio is higher at -3% (Exhibit 5). However, using -3% would have generated only around half of the amount of signals as using -2%. We prefer the -2% as the threshold for skew in this strategy after taking signal frequency into consideration.



Exhibit 4: Spot chg of -1% is baseline for bearish continuation

Scenario analysis peaks at -1% on the x-axis

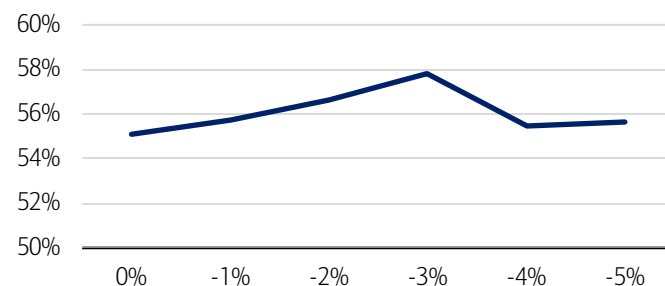
**Source:** BofA Global Research

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Exhibit 5: 1m skew/vol chg of -2% is baseline for bearish continuation

Scenario analysis peaks at -3% on the x-axis

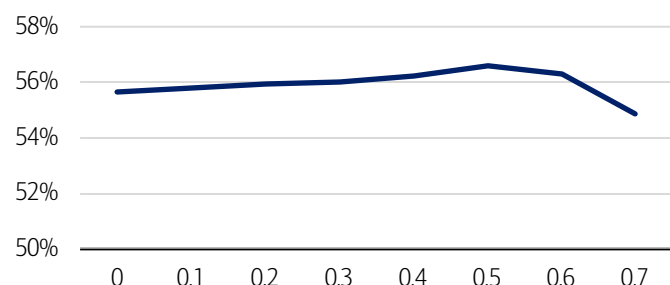
**Source:** BofA Global Research

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Exhibit 6: 1m vol chg of 0.5 is baseline for bearish continuation

Scenario analysis peaks at 0.5 on the x-axis

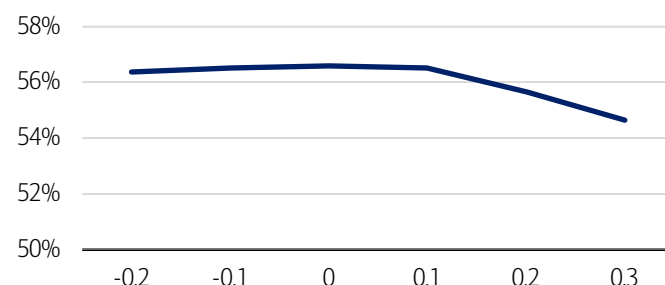
**Source:** BofA Global Research

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Exhibit 7: A positive 1y vol chg is baseline for bearish continuation

Scenario analysis peaks at 0 on the x-axis

**Source:** BofA Global Research

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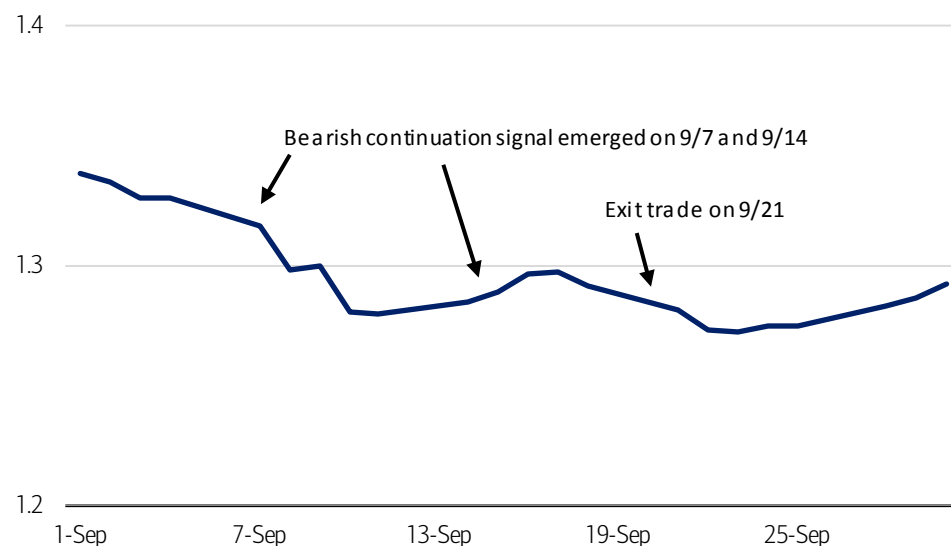
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Application to GBP selloff in September 2020

Investors heavily sold GBPUSD in September 2020 due to concerns over Brexit trade deal negotiations. Indeed, the strategy showed bearish continuation signals for GBPUSD for two consecutive weeks. On September 7th, after GBPUSD had already declined by 1.5%, the bearish continuation strategy generated a sell signal and expected further GBP weakness. The Event analysis model was able incorporate volatility information to capture the -2.7% further depreciation of GBP for the subsequent two weeks.

Exhibit 8: Strategy captured GBPUSD selloff in September 2020

Recent application of bearish continuation under new parameters

**Source:** BofA Global Research, Bloomberg

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Strategy 2: Bearish contrarian**Divergence between spot and skew signal bearish contrarian**

In this strategy, we look to fade spot appreciation if it is not supported by the front-end skew/vol ratio. This strategy has the highest hit ratio both since inception and in recent years (Exhibit 9). We observed during our review front-end and back-end vol change thresholds only acted to reduce the number of signals without meaningfully improving the hit ratio. As a result, we don't include any thresholds for vol changes in this strategy.

Exhibit 9: Updated levels for bearish contrarian strategy

Bearish contrarian strategy has long term hit ratio of 61%

Strategy	Spot Return	1m vol chg	1y vol chg	1m skew/ATM vol	Hit Ratio	Hit Ratio since 2018
Bearish Contrarian	Rise by more than 1%	n/a	n/a	Decline by more than 2%	61%	84%

Source: BofA Global Research

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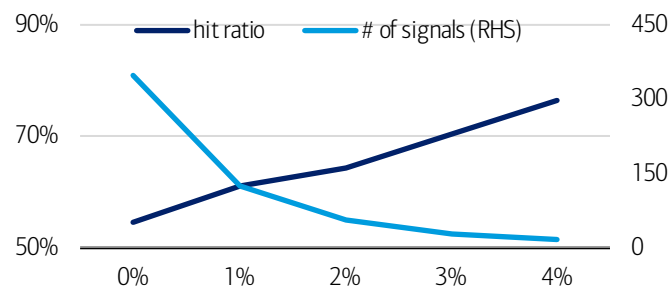
Sensitivity of the hit ratio to parameter changes

Hit ratio has a monotonic relationship with levels placed on spot and skew (Exhibit 10-Exhibit 11). Greater divergence between spot and skew leads to a better hit ratio, but at the cost of fewer signals. We believe 1% for spot return and -2% for skew return is a reasonable balance between the frequency of signals and attaining a relatively high hit ratio.



Exhibit 10: Spot chg of -1% is baseline for bearish contrarian

Scenario analysis for hit ratio and # of signals meets at 1% of x-axis



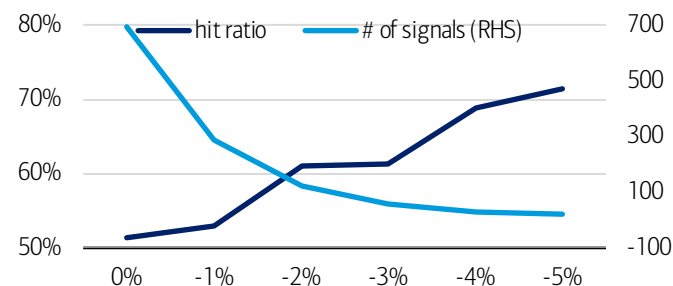
Source: BofA Global Research

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Exhibit 11: 1m skew/vol chg of -2% is baseline for bearish contrarian

Scenario analysis for hit ratio and # of signals meets at -2% of x-axis



Source: BofA Global Research

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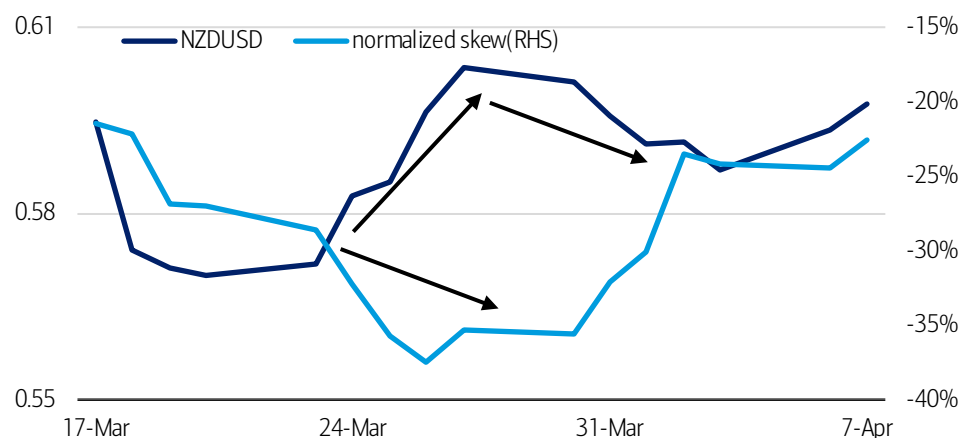
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Declining skew signals imminent pullback in spot after a rally

From March 24th to 31st last year, NZDUSD spot rose from 0.57 to 0.6, while the 1m skew/vol ratio declined by around 5% (Exhibit 12). The bearish contrarian signal emerged on March 31st and captured the NZDUSD retreat to 0.58 over the subsequent week.

Exhibit 12: Skew moved for NZD puts while spot rose – fade NZDUSD rally

Recent application of bearish contrarian under new parameters



Source: BofA Global Research, Bloomberg

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Strategy 3: Bullish continuation**Rise in the front-end vol sets up a bullish continuation**

After spot appreciation of more than 2%, coinciding with a rise in front-end vol and skew, we found support for the bullish continuation of the trend. This strategy has a hit ratio of 53% since 2008 (Exhibit 13). It has underperformed in recent years with a recent hit ratio of 51%. The reason this strategy underperforms the other three may be that against USD, most currencies have higher risk status. As a result, rise in FX vol tends to be more associated with a depreciation of the currency against USD. Therefore, it is more difficult to capture bullish continuation trends for FX, measured in USD terms, using information from options.

Exhibit 13: Updated levels for bullish continuation strategy

Bullish continuation strategy has long term hit ratio of 53%

Strategy	Spot Return	1y vol chg - 1m vol chg	1m skew/ATM vol	Hit Ratio	Hit Ratio since 2018
Bullish Continuation	Rise by more than 2%	< -0.1	Rise by more than 2%	53%	51%

Source: BofA Global Research

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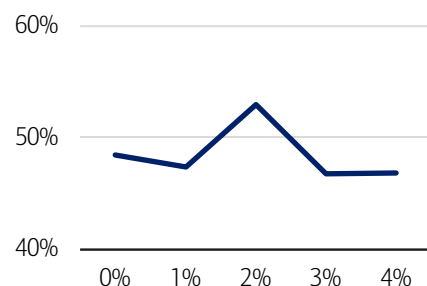
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Sensitivity of the hit ratio to parameter changes

The hit ratio rises to above 50% at 2% threshold for spot return and 2% threshold for skew. At alternative levels of spot and skew, the hit ratio is below 50% (Exhibit 14, Exhibit 16). The sensitivity for the front-end vs back-end vol differential is more gradual and the baseline of -0.1 works well (Exhibit 15).

Exhibit 14: Spot chg of 2% is baseline

Scenario analysis peaks at 2% of x-axis



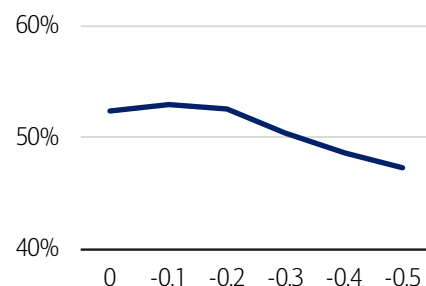
Source: BofA Global Research

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Exhibit 15: Vol differential of -0.1 is baseline

Scenario analysis peaks at -0.1 of x-axis



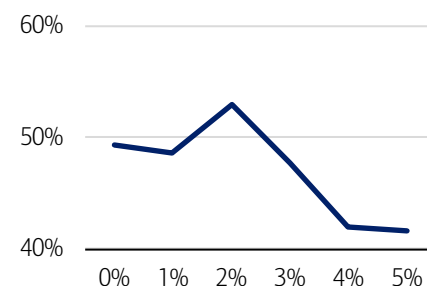
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Exhibit 16: 1m skew/vol chg of 2% is baseline

Scenario analysis peaks at 2% of x-axis



Source: BofA Global Research

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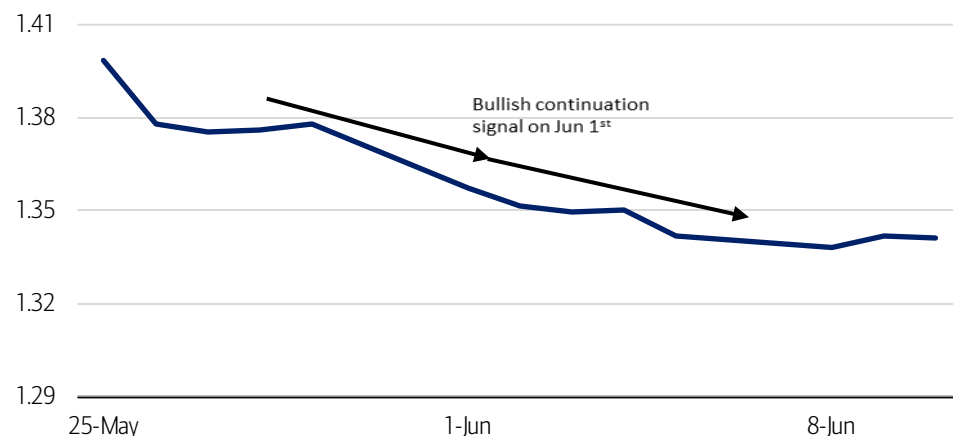
Bullish continuation signal captured CAD appreciation

The USDCAD spot decline from 1.4 to 1.34 from end of May to beginning of June in 2020 was an example where the bullish (CAD) continuation signal took place (Exhibit 17). Level of 1m USDCAD vol was sustained while 1y USDCAD vol dropped from 7.05 to 6.5. The inversion of vol curve combined with skew sharply moving for USD puts created the bullish continuation signal for CAD.



Exhibit 17: Bullish continuation signal captured CAD appreciation

Recent application of bullish continuation under new parameters



Source: BofA Global Research, Bloomberg

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Strategy 4: Bullish contrarian**Front-end vol drop signals bullish contrarian**

As mentioned in previous sections, depreciation of currencies with a higher risk status than USD are typically accompanied by a sharp rise in front-end vol. To the contrary, a drop in the front-end vol may signal the end of the downtrend. We construct the bullish contrarian strategy with this phenomenon in mind. The bullish contrarian strategy has a hit ratio of 57% since 2008, and a hit ratio of 72% in recent years (Exhibit 18).

Exhibit 18: Front-end vol retreat signals reversal of spot downtrends

Bullish contrarian strategy has long term hit ratio of 57%

Strategy	Spot Return	1m vol chg	1y vol chg	1m skew/ATM vol	Hit Ratio	Hit Ratio since 2018
Bullish Contrarian	Decline by more than 1%	<-0.2	n/a	Rise by more than 1%	57%	72%

Source: BofA Global Research

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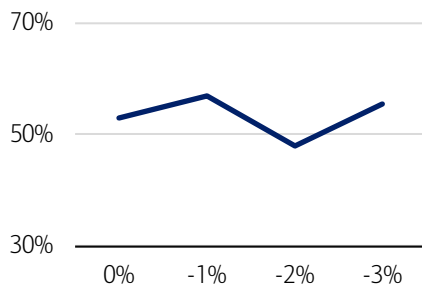
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Sensitivity of the hit ratio to parameter changes

The parameters work well with -1% for spot return, -0.2 for front-end vol change, and 1% for 1m skew/vol (Exhibit 19-Exhibit 21). We refrained from considering more extreme levels since number of signals would be significantly reduced outside of the normally observed ranges in the market.

Exhibit 19: Spot chg of -1% is baseline

Scenario analysis peaks at -1% of x-axis

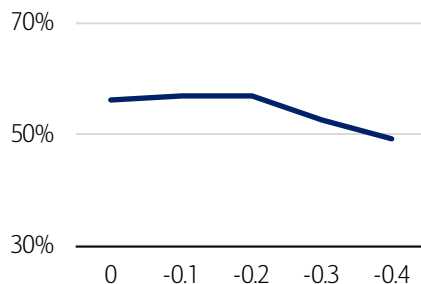
**Source:** BofA Global Research

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Exhibit 20: 1m vol chg of -0.2 is baseline

Scenario analysis peaks at -0.2 of x-axis

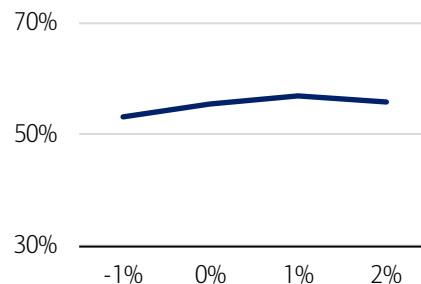
**Source:** BofA Global Research

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Exhibit 21: 1m skew/vol chg of 1% is baseline

Scenario analysis peaks at 1% of x-axis

**Source:** BofA Global Research

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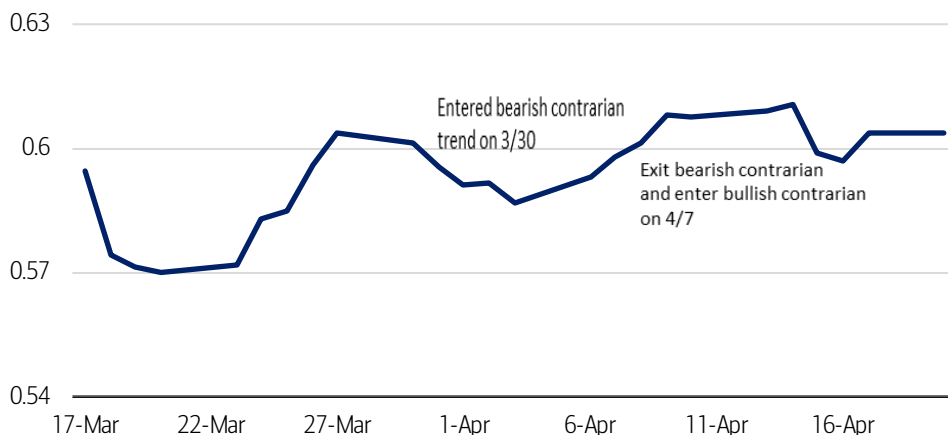
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Bullish contrarian followed by Bearish Contrarian for NZDUSD

Following the week of bearish contrarian trend for NZDUSD at the beginning of April 2020 (Exhibit 22), decline in 1m vol and 1m skew/vol moving back for NZD calls altered the signal to bullish contrarian. In this case, option data provided sufficient information to time the end of the bearish contrarian trend and turn bullish on NZD.

Exhibit 22: After NZDUSD spot dipped to 0.58, NZDUSD reversed trend to rise back above 0.6

Recent application of bullish contrarian strategy under new parameters

**Source:** BofA Global Research, Bloomberg

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