NOMURA

Special Report

Global Markets Research
15 November 2024

A framework to identify themes driving the FX market

- We create a systematic model to identify which theme (oil, commodities, carry, equities, and the dollar) is driving FX markets.
- We discuss the broad construction, currency selection, and the criteria to identify the theme of FX markets.
- The model has sifted out the key FX driver that compliments our existing suite of FX models, and also helps to guide our discretionary macro based FX views.
- Analyzing historical periods of strong themes – oil (Russia-Saudi Arabia, March 2020); commodities (Russia-Ukraine, February 2022); dollar (Fed hikes, March 2022); carry (carry unwind, July 2024); and equity (August 2024), our model was able to identify these as dominant themes.
- We also backtest a few trading strategies to demonstrate the potential and value from this framework. One strategy achieved a 1.3 Sharpe ratio, and we believe this could be easily raised.

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Introduction

We develop a framework to identify the dominant[1] themes impacting FX markets. We focus on five themes (short-term and longer-term), namely: **commodities**, **oil**, **carry**, **equities** and the **dollar**. A probable theme would be identified if the underlying FX pairs present: 1) consistency in currency returns in accordance with the respective theme; 2) consistency of currency performance with the benchmark; and 3) when multiple themes are identified as probable on any day, we rank the themes based on the risk-adjusted returns of the corresponding currency baskets.

We structure our report into three sections:

1. First, we discuss the broad construction to identify the FX themes; this includes the currency selection process and the criteria to identify the theme.
2. Second, we conduct a qualitative analysis on the **usefulness of this model to identify the dominant FX themes** in recent years (2020-2024).
3. Third, we **backtest a few simple trading strategies** to demonstrate the potential value from this framework in identifying FX themes.

Overview of the framework

Identification of major themes

In building a systematic framework to identify FX themes, we list out the major themes that drive the FX market (Figure 1):

1. **Commodities:** This theme tends to arise when there are major events that disrupt global supply chains, such the Covid pandemic and onset of the Russia-Ukraine war. The benchmark we have used for this theme is CRB All commodities spot index.
2. **Oil:** The oil theme could be viewed as having some overlap with the commodity theme, but this tends to be a specific focus when oil producers are embroiled in conflict. The benchmark for this theme is Brent oil prices.
3. **Carry**: This theme tends to be dominant (e.g., long higher yielding FX) when market volatility is low, but this can also be the case in a high volatility environment (e.g., FX carry unwind theme from July-August 2024). There is no benchmark, so we analysed the historical carry profile[2] of each FX pair (against USD).
4. **Equities**: This theme tends to arise during periods of strong equity gains or losses and is also generally associated with risk sentiment. The benchmark for this theme is the US S&P500 equity index.
5. **Dollar**: Broadly driven by US economic and policy events, such as the Fed's rate cycle. The benchmark for this theme is DXY.

Fig. 1: Five FX themes and respective benchmark index

FX Theme	Commodities	Oil	Carry	Equities	Dollar
Benchmark Index	CRB All Commodities spot index	Brent oil price	-	US S&P 500 equity Index	DXY
BBG Ticker	CRB Index	CO1 Comdty	-	SPX Index	DXY Index

Source: Bloomberg, Nomura

Selection of currencies for each theme

In the currency selection process, our considerations are: 1) correlation with the benchmark index; 2) sufficient liquidity and daily volume of the currency (i.e., based on BIS triennial data); and 3) minimising the overlapping of currency in different baskets.

To select the currencies that are most relevant for the themes (excluding Carry), we assess the correlation of the weekly return of global/EM currencies and the respective benchmark indices. From an initial list of key global/EM currencies, we selected the top four currencies with the highest positive and negative weekly correlations to the benchmark for each theme to construct a basket. As for the carry theme, we analysed the carry profile of the currencies and selected those with the highest and lowest historical carry in the most recent Fed hiking cycle (i.e., March 2022 onwards). That said, we also exercise some discretion to minimise the overlapping of selected FX pairs for the five themes.

Note that, as Commodities, Oil and Carry themes each has two sides, the corresponding baskets will consist of eight FX pairs, rather than four FX pairs for Equities and Dollar themes. For example, higher oil prices may benefit oil exporters, while oil importers may suffer (Figure 2).

Fig. 2: Components of FX baskets

FX Theme	FX Basket	Currency			
Commodities	FX benefits from higher commodities	AUD	NZD	BRL	ZAR
	FX suffers from higher commodities	EUR	JPY	INR	KRW
Oil	FX benefits from higher oil	NOK	BRL	MXN	CAD
	FX suffers from higher oil	PHP	PLN	THB	INR
Carry	High carry FX	ZAR	INR	BRL	MXN
	Low carry FX	CNH	JPY	TWD	CHF
Equities	Equity sensitive FX	KRW	GBP	TWD	SEK
Dollar	Dollar Sensitive FX	SGD	CNH	PLN	JPY

Source: Nomura

We also looked at whether our framework is able to single out the dominant themes on a timely and accurate basis, both over short-term (i.e., over 3, 5 and 7 sessions) and longer-term (i.e., over 5, 10 and 22 sessions) horizons.

Identification of the themes

The final step in building our framework is to identify and rank the current dominant themes in FX markets. In our framework, we define short-term theme as one which is identified based on returns over 3, 5 and 7 trading sessions, and longer-theme theme as one which is identified based on returns over 5, 10 and 22 trading sessions. In particular, a probable theme would be identified if the underlying FX pairs for each theme present:

1. **Consistency in currency returns in accordance with the respective theme** (e.g., a currency that benefits from higher oil prices is stronger while a currency that suffers from higher oil prices is weaker);
2. A **consistency of currency performance with the benchmark** (e.g., currencies that benefit from higher oil prices gain with higher oil prices); and
3. When **multiple themes are identified as probable** on any day, we rank the themes based on the volatility-adjusted returns of the corresponding currency baskets. In other words, on any particular day in which multiple themes have emerged, our methodology will single out the **dominant theme** (i.e., ranked as probable (1)), and ranked the rest (e.g., as **probable** (2)) based on volatility adjusted returns. In Figures 3 and 4, our snapshot for 24 October 2024 highlighted that the dominant theme was the ***Dollar*** .

Fig. 3: Snapshot of short term signal on 24 October 2024

Dominant Theme	Dollar
FX Themes	**Signal**
Commodities	Unclear
Oil	Unclear
Carry	Unclear
Equities	**Probable (2)**
Dollar	**Probable (1)**

Source: Bloomberg, Nomura.

Fig. 4: Snapshot of FX baskets' return under each theme on 24 October 2024

FX theme	FX basket	3d	5d	7d
Commodities	FX benefits from higher commodities	-0.6%	-0.7%	-1.3%
	FX suffers from higher commodities	-0.7%	-0.9%	-1.2%
Oil	FX benefits from higher oil	-0.1%	-0.2%	-1.3%
	FX suffers from higher oil	-0.8%	-0.9%	-1.0%
Carry	High carry FX	-0.2%	-0.1%	-1.1%
	Low carry FX	-0.6%	-0.5%	-0.6%
Equities	Equity sensitive FX	-0.5%	-0.5%	-1.1%
Dollar	Dollar Sensitive FX	-0.9%	-1.0%	-1.4%

Source: Bloomberg, Nomura.

1. On a trading session, one or more FX themes (out of total of five) may be identified as "**Probable**". We will then rank the themes based on volatility-adjusted returns and the top theme will be identified as the "**Dominant**" theme.
2. Owing to the potential shift in carry profile from changes in central banks' monetary policies, we will review the carry basket periodically.

A deep dive into historical periods with notable FX themes

Event-based qualitative analysis

Since we started running this FX theme model, it has served us well in sifting out the dominant themes to complement our existing suite of FX models (e.g., *weekly* and *monthly* analytics), and in making macro assessments.

To further assess whether the framework could systematically identify the dominant and probable themes historically, we delve further into several major events over the past few years (2020-2024) that had notable impacts in FX markets, including the stock market fall in early 2020 due to concerns of Covid pandemic, the Russia-Ukraine war in 2022 and most recently the unwind of carry trades and the subsequent recovery in US/global equities. We also looked at whether our framework is able to single out the dominant themes on a timely and accurate basis, both over short-term (i.e., over 3, 5 and 7 sessions) and longer-term (i.e., over 5, 10 and 22 sessions) horizons.

In addition, we also provide a brief review of returns generated from a simple momentum-based strategy on trading the FX baskets associated with the dominant themes over the identified periods. We do this to illustrate some consistency in generating positive returns from the main FX theme (Figure 5). In the following section on "**Extracting trading signals from the FX themes**", we provide further details on this momentum-based strategy.

Fig. 5: Broadly positive returns from a momentum-based trading strategy based on FX themes

Event	Dominant theme	Start Date	End Date	Total number of sessions in trade	Overall Returns (%)		Returns with dominant theme (%)		Number of trades entered with dominant theme	
					Short term signal	Longer term signal	Short term signal	Longer term signal	Short term signal	Longer term signal
Russia Ukraine war	Commodities	18-Feb-22	29-Mar-22	28	6.7%	4.4%	2.0%	0.5%	6	14
The Russia-Saudi Arabia oil price war	Oil	28-Feb-20	11-Mar-20	9	5.4%	6.9%	2.7%	0.0%	2	0
Oil demand shock due to Covid pandemic	Oil	20-Apr-20	27-Apr-20	6	0.7%	-0.1%	1.3%	0.0%	4	3
Recent unwinding of carry trades	Carry	19-Jul-24	07-Aug-24	14	4.0%	1.9%	3.4%	1.6%	12	2
Recovery in equities post carry unwind	Equities	14-Aug-24	04-Sep-24	16	1.2%	1.5%	1.5%	1.7%	14	13
Equity sell-off due to Covid	Equities	13-Mar-20	01-Apr-20	14	4.7%	3.8%	4.2%	3.6%	11	7
Fed hiking cycle to tame inflation	Dollar	19-Apr-22	19-Aug-22	89	4.2%	3.1%	5.0%	5.1%	45	58

Source: Bloomberg,Nomura

Commodities Theme

- Russia Ukraine war (since February 2022)

There were already rising concerns that Russia was preparing to invade Ukraine in early February 2022; *AFP* (6 February) highlighted that "Russia has stepped up preparations for an all-out invasion of Ukraine", quoting US intelligence sources. The significant escalation happened on 24 February 2022, when Russian President Putin announced a special military operation with air strikes and a ground invasion of Ukraine. That resulted in a notable and sustained increase in the prices of energy and food in early 2022, as both Russia and Ukraine are *key global exporters* of crude oil, natural gas, wheat, corn, barley, rye, fertilisers, metals etc. (Figure 6).

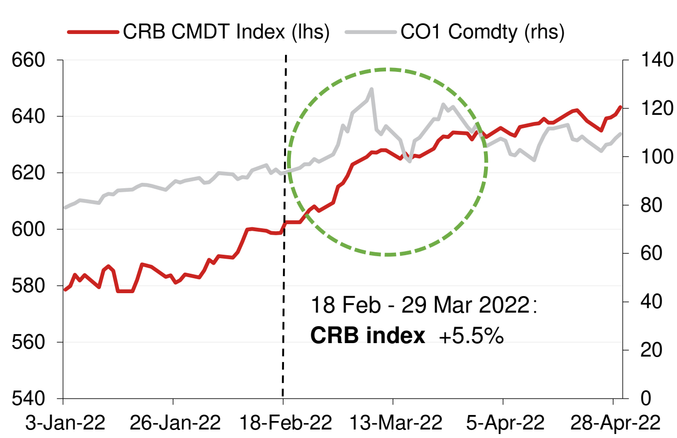
This raised significant market concern over the *economic impact* from the broad surge in commodity prices (i.e., ***Commodities*** theme). After a few rounds of failed peace talks, tentative signs of progress emerged, as peace negotiations were restarted in Istanbul on 29 March 2022 and Russia promised to scale down military operations around Kyiv (*Reuters* , 30 March 2022).

The number of times the ***Commodities*** theme was identified as probable over this period was higher than historical norms. Even before the escalation on 24 February 2022, our short-term signal first picked up ***Commodities*** as the dominant theme on **11 February** and **15 February 2022**, after which the signal became even more consistent in our longer-term signal. From **18 February 2022** (when our longer-term signal first picked up ***Commodities*** as the dominant theme) **to 29 March 2022** (28 sessions), our longer-term signal showed ***Commodities*** as a dominant and probable theme in 14 (50%) and 24 (86%) sessions (Figure 7), respectively. The short-term signal showed ***commodities*** was the dominant and probable theme in 6 (21%) and 14 (50%) sessions, respectively over the same period (Figures 8 and 9).

A brief review on trading strategy (see *Extracting trading signals from the FX themes*):

- In addition, our momentum strategy trading yielded **a 2.0% return**, when trading the FX basket associated with ***Commodities*** as the **short-term** dominant (i.e., first ranked probable) theme over this period (Figure 5).
- Overall, the model generated a **6.7% return** when trading the FX baskets associated with all the identified **short-term** dominant themes over this period. This is owing to several identified dominant themes, such as ***Oil*** and ***Equities,*** making rather sizeable moves over this period as well (Figure 5).

Fig. 6: Commodities prices started to rise before the escalation of Russia-Ukraine war



Source: Bloomberg, Nomura.

Fig. 7: Commodities theme in the longer term signal during the Russia-Ukraine war period

18 February to 29 March 2022 (28 sessions)					
Theme	Commodities	Oil	Carry	Equities	Dollar
Commodities as a probable theme					
No of sessions that this is a probable theme	**24**	6	13	22	18
% of total	**86%**	21%	46%	79%	64%
Commodities as a predominant theme					
No of sessions that this is a dominant theme	**14**	3	6	3	2
% of total	**50%**	11%	21%	11%	7%

Source: Bloomberg, Nomura.

Fig. 8: Short-term signals during the Russia-Ukraine war

Short term signal						
Date	**Dominant theme**	**Commodities**	**Oil**	**Carry**	**Equities**	**Dollar**
11-Feb-2022	**Commodities**	**Probable (1)**	-	Probable (2)	-	-
14-Feb-2022	Equities	-	-	Probable (2)	Probable (1)	-
15-Feb-2022	**Commodities**	**Probable (1)**	-	Probable (2)	Probable (3)	Probable (4)
16-Feb-2022	Carry	-	-	Probable (1)	Probable (2)	-
17-Feb-2022	Equities	-	-	-	Probable (1)	-
18-Feb-2022	Mixed	-	-	-	-	-
21-Feb-2022	Dollar	-	-	-	-	Probable (1)
22-Feb-2022	Dollar	-	-	-	Probable (2)	Probable (1)
23-Feb-2022	Oil	-	Probable (1)	-	-	Probable (2)
24-Feb-2022	Equities	**Probable (2)**	-	-	Probable (1)	-
25-Feb-2022	Dollar	-	-	-	Probable (2)	Probable (1)
28-Feb-2022	Dollar	-	-	-	-	Probable (1)
1-Mar-2022	Equities	-	-	-	Probable (1)	-
2-Mar-2022	Dollar	-	-	-	-	Probable (1)
3-Mar-2022	Dollar	**Probable (2)**	-	-	-	Probable (1)
4-Mar-2022	Dollar	**Probable (2)**	-	Probable (3)	-	Probable (1)
7-Mar-2022	**Commodities**	**Probable (1)**	-	-	-	Probable (2)
8-Mar-2022	Equities	**Probable (2)**	-	-	Probable (1)	Probable (3)
9-Mar-2022	**Commodities**	**Probable (1)**	-	-	Probable (2)	Probable (3)
10-Mar-2022	**Commodities**	**Probable (1)**	-	Probable (2)	Probable (3)	Probable (4)
11-Mar-2022	Carry	**Probable (2)**	-	Probable (1)	Probable (3)	Probable (4)
14-Mar-2022	Carry	-	-	Probable (1)	-	Probable (2)
15-Mar-2022	Dollar	-	-	-	Probable (2)	Probable (1)
16-Mar-2022	Carry	-	-	Probable (1)	-	-
17-Mar-2022	Carry	-	-	Probable (1)	Probable (2)	-
18-Mar-2022	Carry	-	-	Probable (1)	Probable (2)	-
21-Mar-2022	Carry	-	-	Probable (1)	Probable (2)	Probable (3)
22-Mar-2022	Carry	**Probable (2)**	-	Probable (1)	Probable (3)	-
23-Mar-2022	**Commodities**	**Probable (1)**	Probable (3)	Probable (2)	Probable (4)	Probable (5)
24-Mar-2022	**Commodities**	**Probable (1)**	Probable (2)	Probable (3)	-	Probable (4)
25-Mar-2022	**Commodities**	**Probable (1)**	Probable (3)	Probable (2)	-	Probable (4)
28-Mar-2022	Carry	**Probable (2)**	-	Probable (1)	-	Probable (3)
29-Mar-2022	Carry	**Probable (2)**	-	Probable (1)	-	-

Source: Bloomberg, Nomura.

Fig. 9: Longer-term signals during the Russia-Ukraine war

Longer term signal						
Date	**Dominant theme**	**Commodities**	**Oil**	**Carry**	**Equities**	**Dollar**
11-Feb-2022	Carry	**Probable (2)**	-	Probable (1)	Probable (4)	Probable (3)
14-Feb-2022	Carry	-	-	Probable (1)	-	Probable (2)
15-Feb-2022	Carry	**Probable (2)**	-	Probable (1)	Probable (3)	Probable (4)
16-Feb-2022	Carry	-	-	Probable (1)	Probable (2)	-
17-Feb-2022	Equities	-	-	-	Probable (1)	-
18-Feb-2022	**Commodities**	**Probable (1)**	-	-	Probable (2)	-
21-Feb-2022	Equities	-	-	-	Probable (1)	-
22-Feb-2022	**Commodities**	**Probable (1)**	-	-	Probable (2)	-
23-Feb-2022	**Commodities**	**Probable (1)**	-	-	Probable (2)	Probable (3)
24-Feb-2022	**Commodities**	**Probable (1)**	-	-	Probable (2)	-
25-Feb-2022	Dollar	**Probable (3)**	-	-	Probable (2)	Probable (1)
28-Feb-2022	Dollar	**Probable (2)**	-	-	-	Probable (1)
1-Mar-2022	Oil	-	Probable (1)	-	-	-
2-Mar-2022	Equities	-	-	-	Probable (1)	-
3-Mar-2022	Oil	**Probable (3)**	Probable (1)	-	Probable (4)	Probable (2)
4-Mar-2022	Oil	**Probable (3)**	Probable (1)	-	Probable (4)	Probable (2)
7-Mar-2022	**Commodities**	**Probable (1)**	-	-	Probable (3)	Probable (2)
8-Mar-2022	Equities	**Probable (2)**	-	-	Probable (1)	Probable (3)
9-Mar-2022	**Commodities**	**Probable (1)**	-	Probable (4)	Probable (2)	Probable (3)
10-Mar-2022	**Commodities**	**Probable (1)**	-	Probable (4)	Probable (2)	Probable (3)
11-Mar-2022	**Commodities**	**Probable (1)**	-	-	Probable (2)	Probable (3)
14-Mar-2022	**Commodities**	**Probable (1)**	-	Probable (2)	Probable (3)	Probable (4)
15-Mar-2022	**Commodities**	**Probable (1)**	-	-	Probable (3)	Probable (2)
16-Mar-2022	Carry	**Probable (2)**	-	Probable (1)	Probable (4)	Probable (3)
17-Mar-2022	Carry	**Probable (2)**	-	Probable (1)	Probable (3)	-
18-Mar-2022	Carry	**Probable (2)**	-	Probable (1)	Probable (3)	-
21-Mar-2022	Carry	-	-	Probable (1)	Probable (3)	Probable (2)
22-Mar-2022	Carry	**Probable (2)**	-	Probable (1)	Probable (3)	-
23-Mar-2022	**Commodities**	**Probable (1)**	Probable (2)	Probable (3)	Probable (5)	Probable (4)
24-Mar-2022	**Commodities**	**Probable (1)**	Probable (2)	Probable (3)	-	Probable (4)
25-Mar-2022	**Commodities**	**Probable (1)**	Probable (3)	Probable (2)	-	Probable (4)
28-Mar-2022	**Commodities**	**Probable (1)**	-	Probable (2)	-	Probable (3)
29-Mar-2022	Carry	**Probable (2)**	-	Probable (1)	-	-

Source: Bloomberg, Nomura.

Oil Theme

- The Russia-Saudi Arabia oil price war (March 2020)

On 8 March 2020, following the failed dialogue between OPEC+ and Russia on oil production cuts on 6 March (*Financial Times* , 7 March 2020), Saudi Arabia slashed crude oil prices and threatened to boost oil output to well above 10 million barrels a day (*Bloomberg* , 8 March 2020). Prior to this, oil prices were already on a downtrend due to the Covid outbreak (*Bloomberg* , 28 February 2020).

Between **28 February 2020** (i.e., when our short-term signal started to pick up ***Oil*** as a probable theme) and **11 March 2020** (nine sessions), our short-term signal captured ***Oil*** as the probable theme driving the FX market in all nine sessions. ***Oil*** became the dominant theme on 10 and 11 March 2020, right after the OPEC+ event (Figure 10).

A brief review of the trading strategy:

- Our momentum strategy generated a **2.7% return**, when trading the FX basket associated with ***Oil*** as the **short-term** dominant (probable 1) theme over this period.
- Overall, our model generated **5.4% return**, when trading the FX baskets associated with all the identified **short-term** dominant themes over this period.

Fig. 10: Oil theme in the short term signal during Russai-Saudi Arabia oil price war

Short term signal						
Date	**Dominant theme**	**Commodities**	**Oil**	**Carry**	**Equities**	**Dollar**
28-Feb-2020	Carry	Probable (3)	**Probable (2)**	Probable (1)	-	Probable (4)
2-Mar-2020	Carry	Probable (2)	**Probable (4)**	Probable (1)	-	Probable (3)
3-Mar-2020	Carry	Probable (3)	**Probable (4)**	Probable (1)	-	Probable (2)
4-Mar-2020	Dollar	-	**Probable (3)**	Probable (2)	-	Probable (1)
5-Mar-2020	Dollar	-	**Probable (4)**	Probable (2)	Probable (3)	Probable (1)
6-Mar-2020	Carry	-	**Probable (3)**	Probable (1)	-	Probable (2)
9-Mar-2020	Carry	-	**Probable (3)**	Probable (1)	-	Probable (2)
10-Mar-2020	**Oil**	-	**Probable (1)**	Probable (2)	-	Probable (3)
11-Mar-2020	**Oil**	Probable (2)	**Probable (1)**	Probable (3)	-	Probable (4)

Source: Bloomberg, Nomura.

- Oil demand shock due to Covid pandemic (April 2020)

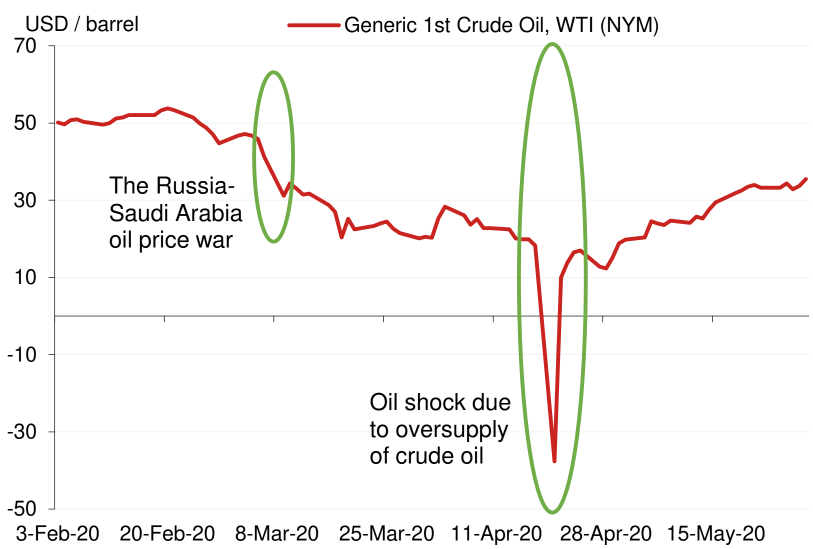
On 20 April 2020, the global oil market experienced an abrupt shock, when US crude oil prices collapsed into negative territory (the May 2020 WTI future plummeted to -USD37 per barrel), driven by a coronavirus-driven demand shock with major economies under lockdown. The shock was short-lived, as WTI prices quickly recovered to above USD0 during the next session and returned to pre-shock levels by 30 April 2020 (Figure 11).

Our short-term signal reflected ***Oil*** as the dominant theme driving FX markets in four sessions (20, 22, 23 and 27 April 2020; Figure 12) and the longer-term signal also captured the same from 23-27 April 2020 (Figure 13).

A brief review of the trading strategy:

- Our momentum strategy generated a **1.3% return**, when trading the FX basket associated with ***Oil*** as the **short-term** dominant theme over this period.
- However, the model generated a lower **0.7% return**, when trading the FX baskets associated with all the identified **short-term** dominant themes over this period.

Fig. 11: WTI future price action during oil shocks



Source: Bloomberg, Nomura.

Fig. 12: Oil showed up as the dominant short-term signal during the oil demand shock in 2020

Short term signal						
Date	Dominant theme	Commodities	Oil	Carry	Equities	Dollar
20-Apr-2020	**Oil**	-	**Probable (1)**	-	-	Probable (2)
21-Apr-2020	Dollar	-	-	-	-	Probable (1)
22-Apr-2020	**Oil**	-	**Probable (1)**	-	Probable (2)	-
23-Apr-2020	**Oil**	-	**Probable (1)**	-	-	Probable (2)
24-Apr-2020	Equities	-	-	-	Probable (1)	Probable (2)
27-Apr-2020	**Oil**	-	**Probable (1)**	-	Probable (2)	-

Source: Bloomberg, Nomura

Fig. 13: Oil showed up as the dominant longer-term signal during the oil demand shock in 2020

Longer term signal						
Date	Dominant theme	Commodities	Oil	Carry	Equities	Dollar
20-Apr-2020	Equities	-	-	-	Probable (1)	Probable (2)
21-Apr-2020	Carry	-	-	Probable (1)	-	Probable (2)
22-Apr-2020	Carry	-	-	Probable (1)	Probable (2)	Probable (3)
23-Apr-2020	**Oil**	-	**Probable (1)**	-	-	Probable (2)
24-Apr-2020	**Oil**	-	**Probable (1)**	-	Probable (3)	Probable (2)
27-Apr-2020	**Oil**	-	**Probable (1)**	-	Probable (2)	-

Source:

Carry Theme

- Recent unwinding of carry trades that started in July 2024

On 11 July 2024, US *June core CPI inflation* unexpectedly slowed sharply to 0.065% m-o-m, right after Powell exhibited a *modestly dovish* tone in his semiannual testimony to the Senate, where he acknowledged “the progress we have seen on inflation”. DXY weakened by as much as 0.92% on 11 July, with spot USD/JPY dropping by as much as 2.5%. Broad ***Dollar*** continued to weaken until 17 July (DXY lower by ~1.2% from 11 to 17 July 2024) and was the main driver of the FX market at that time. Our short-term signal captured the ***Dollar*** as the dominant theme from 11 to 17 July 2024, while our longer-term signal also captured ***Dollar*** as the dominant theme from 12 to 18 July. Although the DXY index was somewhat stable from 18 July 2024 onwards, JPY continued to outperform all G10 and Asia currencies. Also during this period, global equities began to sell off, led by weakness in tech and semi stocks (see *Equities Theme* below).

Interestingly, our short-term signal picked up ***Carry*** as the dominant FX theme (rather than ***Equities*** or ***Dollar***) from **19 July to 7 August 2024** (Figure 14), in line with market discussions that shifted towards “the unwinding of carry trades”. We noted that *several major Japanese media* (e.g., *NHK*, *Jiji*, *Nikkei)* reports on a potential BOJ hike were published on 31 July. This BOJ hike *materialised* and USD/JPY fell by 11.1% between **31 July to 5 August 2024**. Our short-term signal showed ***Carry*** was the dominant theme in 12 out of 14 total sessions (i.e., **19 July to 7 August 2024**). Other popular carry trade funding currencies, such as CNH, also strengthened by as much as 2.7% against USD between 19 July and 7 August 2024.

A brief review of the trading strategy:

- Our momentum strategy generated a **3.4% return**, when trading the FX basket associated with ***Carry*** as the **short-term** dominant theme over this period.
- Overall, our model generated a **4.0% return**, when trading the FX baskets associated with all the identified **short-term** dominant themes over this period.

Fig. 14: Carry theme as the short-term signal during the recent unwinding of carry trades from July to August 2024

Short term signal						
Date	Dominant theme	Commodities	Oil	Carry	Equities	Dollar
7/19/2024	**Carry**	-	-	**Probable (1)**	Probable (2)	Probable (3)
7/22/2024	**Carry**	-	-	**Probable (1)**	Probable (2)	Probable (3)
7/23/2024	**Carry**	-	-	**Probable (1)**	Probable (2)	-
7/24/2024	Equities	-	-	-	Probable (1)	-
7/25/2024	**Carry**	-	-	**Probable (1)**	Probable (2)	-
7/26/2024	Commodities	Probable (1)	-	**Probable (2)**	Probable (3)	Probable (4)
7/29/2024	**Carry**	-	-	**Probable (1)**	Probable (2)	-
7/30/2024	**Carry**	-	-	**Probable (1)**	Probable (2)	-
7/31/2024	**Carry**	Probable (4)	Probable (3)	**Probable (1)**	-	Probable (2)
8/1/2024	**Carry**	-	-	**Probable (1)**	Probable (3)	Probable (2)
8/2/2024	**Carry**	-	-	**Probable (1)**	-	Probable (2)
8/5/2024	**Carry**	Probable (4)	Probable (3)	**Probable (1)**	-	Probable (2)

Source: Bloomberg, Nomura

Equities Theme

- The recent recovery in US/global equities in August 2024 followed the carry unwind-related selloff in JPY

Between 17 July and 5 August 2024, the Nasdaq index fell sharply by 12.5%, owing to growing concerns over the *health of the US labour market* (i.e., Sahm rule), the "carry trade unwind" (see *Carry Theme*), and the sharp selloff in semiconductor stocks on concerns over the durability of the AI theme. Thereafter, equity markets started to recover, amid *benign US labour market data* — such as initial jobless claims and the employment subcomponent of ISM services — and after BOJ Deputy Governor Uchida sent *dovish signals to calm the selloff in the Nikkei*.

Notably, the ***Equities*** was the dominant short-term signal in 14 out of 16 sessions from 14 August to 4 September 2024 (Figure 15). Similarly, the ***Equities theme*** was dominant in the longer-term signal in 13 out of 16 sessions over the same period (Figure 16).

A brief review of the trading strategy:

- Our momentum strategy generated a **1.7% return**, when trading the FX basket associated with ***Equities*** as the **longer-term** dominant theme over this period.
- Overall, our model generated **1.5% return**, when trading the FX baskets associated with all the identified **longer-term** dominant themes over this period.

Fig. 15: Equities as the dominant short-term signal during the recent US equity recovery

Short term signal						
Date	Dominant theme	Commodities	Oil	Carry	Equities	Dollar
14-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
15-Aug-2024	**Equities**	-	-	Probable (2)	**Probable (1)**	Probable (3)
16-Aug-2024	**Equities**	-	-	Probable (2)	**Probable (1)**	Probable (3)
19-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
20-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
21-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
22-Aug-2024	**Equities**	-	-	Probable (3)	**Probable (1)**	Probable (2)
23-Aug-2024	**Equities**	-	-	Probable (2)	**Probable (1)**	Probable (3)
26-Aug-2024	**Equities**	-	-	Probable (3)	**Probable (1)**	Probable (2)
27-Aug-2024	**Equities**	-	-	Probable (2)	**Probable (1)**	Probable (3)
28-Aug-2024	**Equities**	-	-	Probable (2)	**Probable (1)**	-
29-Aug-2024	Dollar	-	-	-	-	Probable (1)
30-Aug-2024	**Equities**	-	-	-	**Probable (1)**	-
2-Sep-2024	**Equities**	-	-	-	**Probable (1)**	-
3-Sep-2024	Dollar	-	-	-	-	Probable (1)
4-Sep-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)

Source: Bloomberg,Nomura

Fig. 16: Equities also dominated as the longer term signal during the recent US equity recovery

Longer term signal						
Date	**Dominant theme**	**Commodities**	**Oil**	**Carry**	**Equities**	**Dollar**
14-Aug-2024	Dollar	-	-	-	-	Probable (1)
15-Aug-2024	Dollar	-	-	Probable (2)	-	Probable (1)
16-Aug-2024	**Equities**	-	-	Probable (3)	**Probable (1)**	Probable (2)
19-Aug-2024	**Equities**	-	-	Probable (3)	**Probable (1)**	Probable (2)
20-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
21-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
22-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
23-Aug-2024	**Equities**	-	-	Probable (3)	**Probable (1)**	Probable (2)
26-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
27-Aug-2024	**Equities**	-	-	Probable (3)	**Probable (1)**	Probable (2)
28-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
29-Aug-2024	**Equities**	-	-	-	**Probable (1)**	Probable (2)
30-Aug-2024	**Equities**	-	-	Probable (3)	**Probable (1)**	Probable (2)
2-Sep-2024	**Equities**	-	-	Probable (2)	**Probable (1)**	Probable (3)
3-Sep-2024	Carry	-	-	Probable (1)	-	Probable (2)
4-Sep-2024	**Equities**	-	-	Probable (2)	**Probable (1)**	-

Source: Bloomberg, Nomura

- 2020 stock market selloff due to the Covid pandemic (February to April 2020)

The Covid pandemic spread to more than 30 countries (*Bloomberg*, 24 February 2020) and led to sharp declines across global equity markets. This started with a 3.4% fall in the SPX on 24 February; Figure 17 and 18), with our short-term signal beginning to pick up ***Equities*** as the dominant theme from the same date.

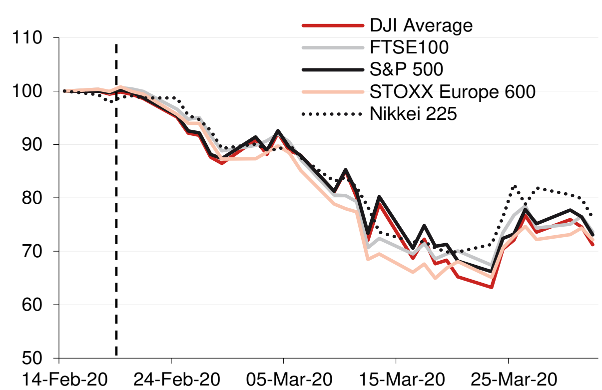
On 3 March 2020, after *highlighting* the "significant effect" of the coronavirus, the RBA (first central bank to cut; -25bp) was followed by a *50bp Fed rate cut* and then by other central banks. ***Carry*** was the dominant theme in both short-term and longer-term signals at that time, but the ***Equities*** theme dominated again from 13 March 2020. Global equities experienced another major selloff (S&P 500 triggered circuit breakers on 9 and 16 March 2020). US equities continued to tumble until the Fed announced additional credit facilities and *open-ended asset purchases* on 23 March 2020, and the US Congress passed the *CARES Act* (worth USD2.2 trillion) into law on 27 March 2020.

From **13 March to 1 April 2020**, our short-term signal consistently captured ***Equities*** as either a dominant or probable theme driving the FX market in all 14 sessions (11 were dominant;Figure 19). Similarly, we saw ***Equities*** as the dominant or probable theme in longer-term signal in all 14 sessions (seven were dominant;Figure 20).

A brief review of the trading strategy:

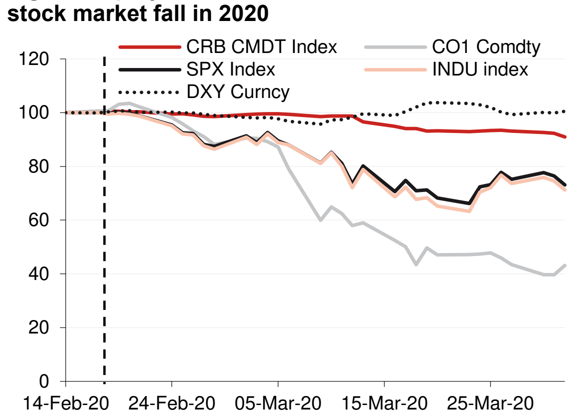
- Our momentum strategy generated a **4.2% return**, when trading the FX basket associated with ***Equities*** as the **short-term** dominant theme from 13 March to 1 April 2020.
- Overall, our model generated **4.7% return**, when trading the FX baskets associated with all the identified **short-term** dominant themes from 13 March to 1 April 2020.

Fig. 17: Global equity indices during 2020 Covid-led selloff



Note: All indices rebased to the close price of 14 February 2020.
Source: Bloomberg, Nomura.

Fig. 18: Equity indices versus other asset classes during stock market fall in 2020



Note: All prices are indexed based the close price of 14 February 2020.
Source: Bloomberg, Nomura.

Fig. 19: Equities was identified as one of the top themes in the short-term signal during the 2020 stock market selloff

Short term signal						
Date	**Dominant theme**	**Commodities**	**Oil**	**Carry**	**Equities**	**Dollar**
13-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
16-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
17-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
18-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
19-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
20-Mar-2020	Dollar	-	-	-	**Probable (2)**	Probable (1)
23-Mar-2020	Dollar	-	-	-	**Probable (2)**	Probable (1)
24-Mar-2020	Dollar	-	-	-	**Probable (2)**	Probable (1)
25-Mar-2020	**Equities**	-	-	-	**Probable (1)**	-
26-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
27-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
30-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
31-Mar-2020	**Equities**	-	-	Probable (3)	**Probable (1)**	Probable (2)
1-Apr-2020	**Equities**	-	-	Probable (2)	**Probable (1)**	Probable (3)

Source: Bloomberg, Nomura

Fig. 20: Equities was identified as one of the key themes in the longer-term signal during the 2020 stock market selloff

Longer term signal						
Date	**Dominant theme**	**Commodities**	**Oil**	**Carry**	**Equities**	**Dollar**
13-Mar-2020	Carry	-	-	Probable (1)	**Probable (2)**	-
16-Mar-2020	**Equities**	-	-	Probable (2)	**Probable (1)**	Probable (3)
17-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
18-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
19-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
20-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
23-Mar-2020	Dollar	-	-	-	**Probable (2)**	Probable (1)
24-Mar-2020	Dollar	-	-	-	**Probable (2)**	Probable (1)
25-Mar-2020	Dollar	-	-	-	**Probable (2)**	Probable (1)
26-Mar-2020	Dollar	-	-	-	**Probable (2)**	Probable (1)
27-Mar-2020	**Equities**	-	-	-	**Probable (1)**	-
30-Mar-2020	**Equities**	-	-	-	**Probable (1)**	Probable (2)
31-Mar-2020	Dollar	-	-	-	**Probable (2)**	Probable (1)
1-Apr-2020	Dollar	-	-	-	**Probable (2)**	Probable (1)

Source: Bloomberg, Nomura

Dollar Theme

- The Fed hike cycle started from March 2022

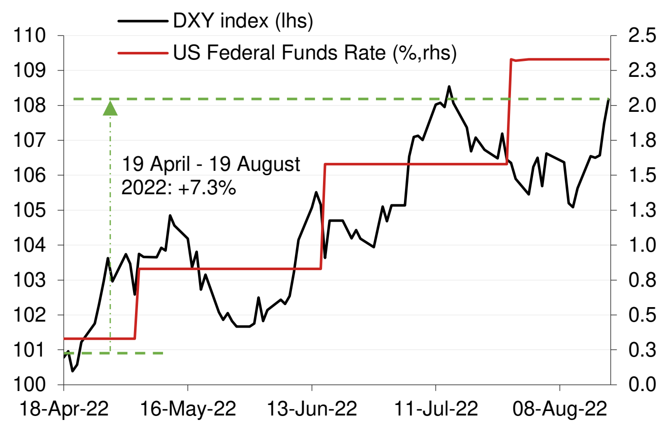
Following the Fed's aggressive rate cuts and open-ended asset purchases in 2020, the US Congress passing the *CARES Act*, the global supply-chain disruption owing to the Covid pandemic and the commodity price surge from the Russia-Ukriane war, the Fed started its hiking cycle at the March 2022 FOMC meeting (hiked by 25bp); it then raised the fed funds rate by 50bp in May 2022, and hiked by 75bp in each of the four subsequent meetings (to November 2022). During this part of the hiking cycle, DXY strengthened significantly (DXY strengthened by 14.5% from 16 March to 3 November 2022) and remained supported for the rest of 2022.

From **19 April to 19 August 2022** (total 89 sessions), our models identified the ***Dollar*** as a key theme, with the short-term signal showing this being a probable theme in 69 sessions (78% of total), and a dominant theme in 44 sessions (49% of total). This was more evident in the longer-term signal, as the ***Dollar*** was observed in 83 sessions (93% of total) as a probable theme and 58 sessions (65% of total) as the dominant theme (Figures 22 and 23). We note that this theme evolved into ***Equities*** from late August to September 2022.

A brief review of the trading strategy:

- Our momentum strategy generated a **5.1% return**, when trading the FX basket associated with ***Dollar*** as the **longer-term** dominant theme over this period (19 April to 19 August 2022).
- However, our model only generated **3.1% return**, when trading the FX baskets associated with all the identified **longer-term** dominant themes over this period (19 April to 19 August 2022).

Fig. 21: DXY performance during Fed hiking cycle in 2022



Source: Bloomberg, Nomura.

Fig. 22: Dominance of Dollar theme during Fed hiking cycle in 2022

19 April to 19 August 2022 (89 sessions)					
Theme	**Commodities**	**Oil**	**Carry**	**Equities**	**Dollar**
Short term signal					
No of sessions that this is a probable theme	6	11	9	54	**69**
% of total	7%	12%	10%	61%	**78%**
Longer term signal					
No of sessions that this is a probable theme	5	2	5	57	**83**
% of total	6%	2%	6%	64%	**93%**

Source: Bloomberg, Nomura.

Fig. 23: Snapshot of short-term signal during the Fed hiking cycle in 2022

Short term signal						
Date	**Dominant theme**	**Commodities**	**Oil**	**Carry**	**Equities**	**Dollar**
19-Apr-2022	**Dollar**	-	-	-	Probable (2)	**Probable (1)**
20-Apr-2022	**Dollar**	Probable (3)	Probable (2)	-	Probable (4)	**Probable (1)**
21-Apr-2022	**Dollar**	-	Probable (2)	-	Probable (3)	**Probable (1)**
22-Apr-2022	**Dollar**	-	-	-	Probable (2)	**Probable (1)**
25-Apr-2022	**Dollar**	-	-	-	Probable (2)	**Probable (1)**
...	...	...	...	...	...	...
19-May-2022	**Dollar**	-	-	-	-	**Probable (1)**
20-May-2022	**Dollar**	-	-	-	-	**Probable (1)**
23-May-2022	**Dollar**	-	-	-	-	**Probable (1)**
24-May-2022	**Dollar**	-	-	-	Probable (2)	**Probable (1)**
25-May-2022	**Dollar**	-	-	-	-	**Probable (1)**
26-May-2022	**Dollar**	-	-	-	-	**Probable (1)**
...	...	...	...	...	...	...
16-Jun-2022	Equities	-	-	-	Probable (1)	**Probable (2)**
17-Jun-2022	Equities	-	-	-	Probable (1)	**Probable (2)**
20-Jun-2022	**Dollar**	-	-	-	-	**Probable (1)**
21-Jun-2022	**Dollar**	-	-	-	-	**Probable (1)**
...	...	...	...	...	...	...
5-Jul-2022	**Dollar**	-	-	-	-	**Probable (1)**
6-Jul-2022	**Dollar**	-	-	-	-	**Probable (1)**
7-Jul-2022	**Dollar**	-	-	-	-	**Probable (1)**
8-Jul-2022	**Dollar**	-	-	-	-	**Probable (1)**
11-Jul-2022	**Dollar**	-	-	-	-	**Probable (1)**
12-Jul-2022	**Dollar**	-	-	-	-	**Probable (1)**
13-Jul-2022	**Dollar**	-	-	-	-	**Probable (1)**
14-Jul-2022	**Dollar**	-	-	-	Probable (2)	**Probable (1)**
15-Jul-2022	**Dollar**	-	-	-	Probable (2)	**Probable (1)**
18-Jul-2022	Oil	-	Probable (1)	-	-	**Probable (2)**
19-Jul-2022	**Dollar**	-	Probable (2)	-	-	**Probable (1)**
20-Jul-2022	Equities	-	-	-	Probable (1)	**Probable (2)**
21-Jul-2022	Equities	Probable (3)	-	-	Probable (1)	**Probable (2)**
22-Jul-2022	**Dollar**	-	-	-	Probable (2)	**Probable (1)**
25-Jul-2022	**Dollar**	-	-	-	Probable (2)	**Probable (1)**
26-Jul-2022	**Dollar**	-	-	-	-	**Probable (1)**
27-Jul-2022	**Dollar**	-	-	-	-	**Probable (1)**
28-Jul-2022	Oil	-	Probable (1)	-	Probable (2)	-
29-Jul-2022	**Dollar**	-	-	-	Probable (2)	**Probable (1)**
...	...	...	...	...	...	...

Source: Bloomberg, Nomura.

Extracting trading signals from the FX themes

Identifying key FX themes complements our existing suite of FX models (*weekly* and *monthly* analytics) and supports our macro assessments, but a common question is whether the signals from FX themes could be used for systematic trading.

We backtested **three simple trading strategies** to demonstrate the potential and value from this framework. The metrics that we used to understand the effectiveness of the model are the returns/Sharpe ratio on FX trades taken, as well as the consistency of the signals generated.

Methodology

Trading strategy: We employ an equal-weighted trading strategy that is based on momentum.

1. We enter a **trade in the FX basket associated with the identified dominant FX theme** (i.e., the one ranked as most probable). The decision **to go long or short the basket** is based on whether the basket returns from previous sessions are positive or negative (i.e., momentum).
   a. For example, if we have a short-term Commodities theme for the day, and the associated FX basket shows positive returns in previous sessions, then we go long the commodities-linked FX basket.
2. At the next trading session, we **hold the basket** if the dominant FX theme is unchanged. However, if a new signal is generated, we exit the basket and **enter a new FX basket** associated with the new FX theme, or have **no trade** if there is no FX theme identified for the day.

Time frame: We backtested the trading strategy to 2020 to ascertain if the model has been able to generate a reasonable return and Sharpe ratio (i.e., close to 1.0).

We ran the same trading strategy separately for both short-term and longer-term FX themes generated, and analyzed the results separately. This was also the trading strategy employed for the return analysis in the preceding section on *A deep dive into historical periods with notable FX themes*.

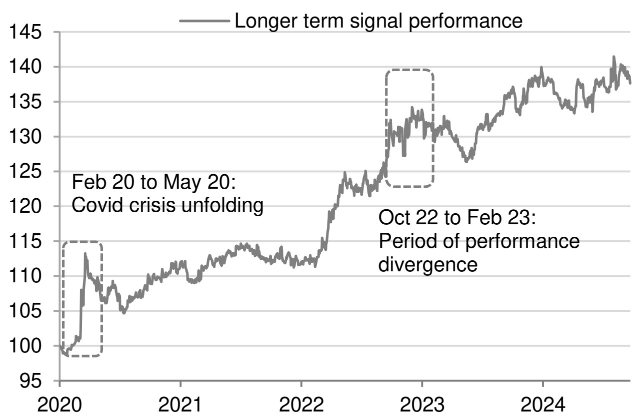
Backtesting results

Backtesting results suggested the longer-term signal performed slightly better than the short-term signal, yielding an **average 6.7% annualized return**, with a **Sharpe ratio of 0.90**. The short-term signals **yielded a more modest 4.8% annualized return** with a **Sharpe ratio of 0.63**. That said, except for a short period (from October 2022 to February 2023; see more below) during which there was a rather large divergence, we observed that both the short-term and longer-term signals had performed rather closely (Figures 24 and 25).

In addition to Sharpe ratios, we also demonstrated that **this trading approach provided highly consistent positive returns through those major events** (from 2020-2024) which had notable impacts on FX markets (see on *A deep dive into historical periods with notable FX themes*; Figure 5).

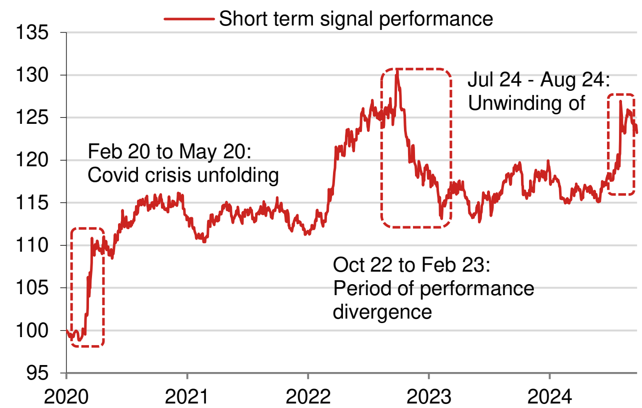
With this trading strategy already yielding Sharpe ratios near 1.0, there is room for improvement through a further refinement and optimisation of the strategy (see *More advanced trading strategies*).

Fig. 24: Cumulative returns from longer-term signal



Source: Bloomberg,Nomura

Fig. 25: Cumulative returns from short-term signal



Source: Bloomberg,Nomura

A closer look at trading returns

We took a deeper look into a few specific periods of significant outperformance or underperformance to understand the drivers of our trading model.

February to May 2020 (10.2% and 7.9% gain on the short-term and longer-term signals, respectively; Figures 24 and 25**):** This was when the Covid crisis was unfolding, and it was the flight away from risky asset classes that helped our momentum-based trading model to generate significant positive returns.

- **The unwind of carry trades** resulted in our ***short carry-linked FX basket*** performing very well from **28 February to 9 March 2020**, earning cumulative returns of ~5.1% (longer-term model; 2.7% gain from short-term model over the same period), owing to a flight to safety.
- ***Equity sensitive FX trades*** based on longer-term signals yielded a net 1.9% positive return in the period from February to May 2020 (see *2020 stock market selloff due to Covid pandemic*).

October 2022 to February 2023: This was the period where we saw a significant divergence between returns generated from the short-term and the longer-term signals. We observed a 11% drawdown on trades generated by the short-term signal (arguably, a slightly more sophisticated trading model would have an overlay to reduce/prevent this significant drawdown), while trades generated by the longer-term signal were rather flat. This was also a period of highly volatile markets, as investors tried to gauge the extent of the Fed hiking cycle, which may have resulted in mixed signals.

- For example, on 7 October 2022, the SPX index fell by 2.8% following a strong NFP report. Our **short-term signal suggested a long position in the equities-linked FX basket** (vice versa for the longer-term model). Our short-term model lost 1.1% on this day.

19 July to 7 August 2024 (4.0% and 1.9% gain on the short-term and longer-term signals, respectively): During this period, there was an abrupt market unwind of previously accumulated carry trade positions. In this case, our short-term signal was able to identify the carry trade unwind theme and performed well during the period. On the other hand, the longer-term model was slower to catch this carry-unwind theme, as it was rather abrupt (see *Recent unwinding of carry trades that started in July 2024*).

- From 19 July to 7 August 2024, our **short-term signal generated a cumulative return of 4.0%**, mainly from the carry trade unwind.

Trading returns over the years

Breaking down the returns into annual periods, we observed that the returns were mostly positive with limited periods of anaemic returns.

Upon closer look, we observed that returns may be positively correlated with the volatility in the market. We saw a somewhat flat absolute P&L during 2021, where the **average standard deviation for returns stood at ~0.33%**, in contrast to an **overall average standard deviation of 0.46%** for all these years. Conversely, the **average standard**

deviation in 2020 was the highest at ~0.56%, which corresponded with the years with the highest absolute returns (Figure 26).

Fig. 26: Returns over the years

Year	% Total Returns		Sharpe Ratio		Standard Deviation	
	Short term signal	Longer term signal	Short term signal	Longer term signal	Short term signal	Longer term signal
2020	12.6	11.5	1.38	1.20	0.55%	0.58%
2021	-1.2	0.4	-0.22	0.07	0.32%	0.34%
2022	6.0	18.2	0.76	2.00	0.48%	0.55%
2023	1.2	4.1	0.17	0.60	0.42%	0.42%
2024*	3.5	-0.9	0.61	-0.18	0.47%	0.43%

Note: 2024 data as of 20 September 2024
Source: Nomura

Performance across different FX themes

Looking at the average returns per day for different types of signals, we observed that the ***Carry*** and ***Dollar*** themes yielded more consistent positive returns, although average returns can be enhanced with more advanced trading strategies (see *More advanced trading strategies*).

One point to note is that, while we have more than 200 signals generated for ***Carry***, ***Equities*** and ***Dollar*** themes, the count is less than 100 for the **Commodities** and **Oil** FX trades over our sample period (Figure 27).

Fig. 27: Number of signals generated

Theme	Number of Signals		Average return per day (bps)	
	Short term signal	Longer term signal	Short term signal	Longer term signal
Commodities	61	54	8.5	3.8
Oil	80	60	-2.7	-3.9
Carry	205	196	7.2	5.1
Equities	371	347	-2.5	2.2
Dollar	497	564	2.8	2.8

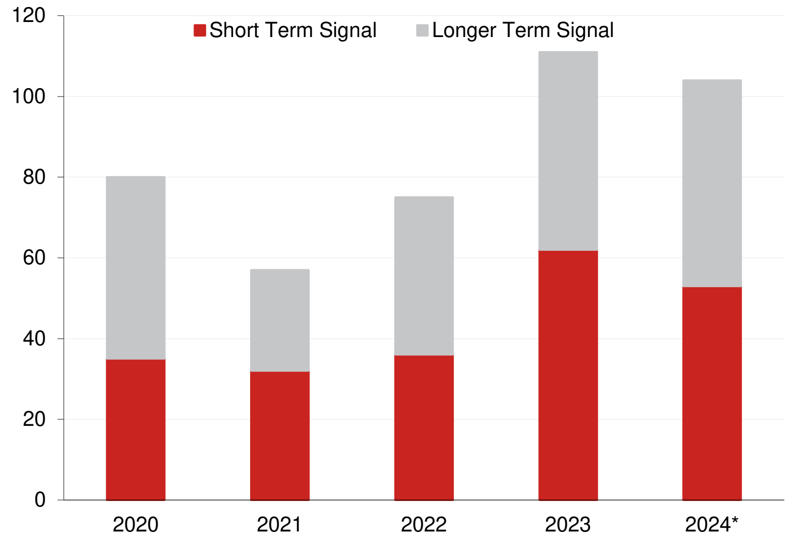
Source: Bloomberg,Nomura

Results suggest underperformance of the ***Oil*** signal. However, upon closer analysis, we see that even the smaller moves in the Oil benchmark are being picked up by the model, but these do not necessarily point to a broader theme. Thus, if we set a threshold for the move in Brent before entering a trade, the results improve.

Specifically, when we set a threshold of 2% to the move in Brent before taking the trade, the results improve from a **-2.7bp average return to +6.5bp** for the short-term signal, and from **average returns of -3.9bp to +4.7bp** for the longer-term signal (see *More advanced trading strategies*). However, the number of signals generated drops from 80 to 26 for the short-term signal, and from 60 to 27 for the longer-term signal.

Signals generated for the ***commodities*** and ***carry-link FX baskets*** were the better performing signals in our model. However, carry trade signals have been more frequent in recent years, in line with the markets increasing focus on the carry theme, given shifts in central bank rate policies (Figure 28). Indeed, backtesting results suggest the model has been able to accurately (and profitably) identify the carry theme more often than not.

Fig. 28: Increasing relevance of the Carry trade in the last two years



Note: 2024 data is as of 20 September.
Source: Bloomberg,Nomura

More advanced trading strategies

We were able to generate positive results with the simple trading strategy above, underpinning the value of the model. In this section, we take a step further to develop two slightly more advanced strategies **to improve the average returns from the basic strategy discussed above**. Specifically, these two strategies addressed the issues of anaemic returns generated from the basic short-term signals during the October 2022 to February 2023 period, as well as the underperformance of the basic trading signals generated for the ***Oil*** theme.

Alternative trading strategy (1): Persistency in trading signals

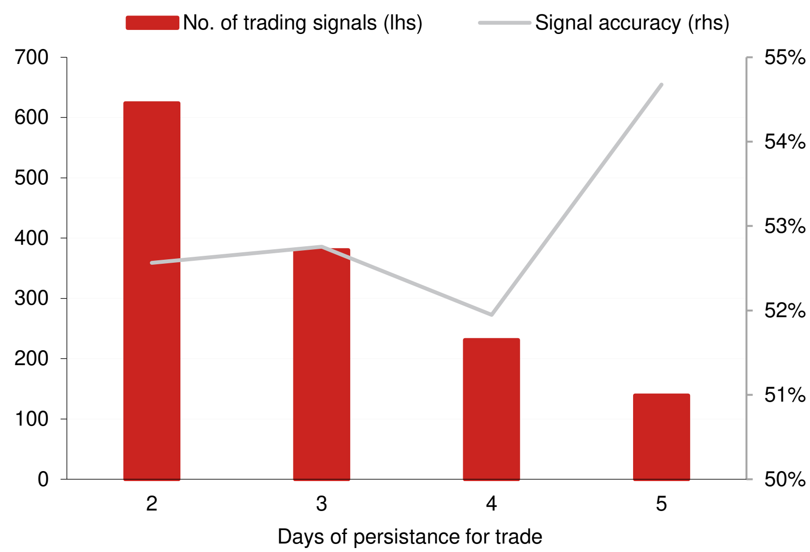
We employ an equal-weighted trading strategy that is momentum based, but with an additional check for persistence in the identified FX theme.

1. We enter a trade in the FX basket associated with the identified dominant FX theme. We also **check for persistence in the identified FX theme** (i.e., if the theme is ranked as most probable for multiple trading sessions). The decision to long or short the basket is based on whether the basket's returns are positive or negative.
   a. For example, if we have a short-term Commodities theme, the associated FX basket shows positive returns from the previous sessions, and these same signals persist over a multi-day period, then we would go long the commodities-linked FX basket.
2. At the next trading session, we hold the basket if the dominant FX theme is unchanged. However, if a new signal is generated, we exit the basket and have no trade until a new signal shows persistence.

We applied this trading strategy (from 2020) for the short-term model by using a different number of days on which the same signal is generated to enter the trade (i.e., we enter a trade if the signal has remained persistent for "n" days, where we change n from 2 to 5).

Looking at Figure 29, there is also a trade-off between looking for greater persistence relative to the number of trades undertaken, and the accuracy of signal. We define accuracy as the percentage of trades that were in the right direction. Performance statistics are promising across different thresholds for the short-term signal; however, we prefer the 3-day persistence threshold, as it provides a reasonable number of trades (380 versus 1214 with our first trading strategy) with a reasonable hit ratio (**52.8% versus 49.7%** with our basic trading strategy discussed above).

Fig. 29: Number of trades versus signal accuracy (short-term signal)



Source: Nomura

Alternative trading strategy (1): Backtesting results

Taking 3-day consistency in signals as a benchmark for persistence, we observe the trading strategy based on the **short-term signal yields an annualized return of 10.1%**. This is because the persistence has helped in confirming a trend, especially during the equity selloff from October 2022 to February 2023 that caused the short-term signal underperformance discussed above.

More importantly, with a 3-day persistence, we were able to significantly **improve the Sharpe ratio of the trading strategy based on the short-term signal to 1.34x**, from the original Sharpe ratio of 0.63x (Figure 30).

Fig. 30: Performance of persistent short-term signals

	Without persistance	With 3-day persistance
Number of Trades	1214	380
Average Returns (Annualized)	4.5%	10.1%
Sharpe Ratio	0.6	1.3

Source: Bloomberg, Nomura.

We also drilled into the returns for 3-day persistent short-term signals generated for each theme (Figure 31). The number of ***Oil*** and ***Commodities*** signals were rather limited to draw strong conclusions. Returns from ***Carry*** and ***Dollar*** signals performed fairly well, and returns from ***Equities*** were somewhat flat.

Fig. 31: Performance of 3-day persistent signal

	Commodities	Oil	Carry	Equities	Dollar
Number of Trades	3	5	47	126	199
Accuracy	67%	40%	55%	50%	54%
Average Return per Trade (bps)	35.0	-3.3	11.1	1.8	3.5

Source: Bloomberg,Nomura

Alternative trading strategy (2): Setting thresholds on benchmark changes

For this strategy, we employ an equal-weighted trading strategy that is momentum based but with an additional check for a minimum move in the benchmark index for the identified

FX theme. As the ***Carry*** signal does not have a benchmark index, trades for the Carry theme in this section will be the same as the basic trading strategy above.

1. We enter a trade in the FX basket associated with the identified dominant FX theme. We also **check for the move in benchmark index for the identified FX theme** (i.e., if the corresponding benchmark moved by a minimum threshold) in the preceding session.
    a. For example, if we have a short-term Oil theme, and the associated benchmark (i.e., Brent) moved by the minimum threshold, then we would long/short the oil-linked FX basket based on whether the basket returns from the previous sessions are positive or negative (i.e., momentum).
2. At the next trading session, we hold the basket if the dominant FX theme stays unchanged and the benchmark returns remain above the threshold. However, if benchmark returns dip, we exit the trade.
3. We define the threshold move for the benchmark at approximately 1 standard deviation for the benchmark daily return over the backtesting period (i.e., 1 January 2020 to 20 September 2024; Figure 32).

Fig. 32: Threshold move in benchmark for entering

Theme	Commodities	Oil	Carry	Equities	Dollar
Index	CRB All Commodities Spot index	Brent oil price	NA	US S&P 500 Equity Index	DXY
Threshold	0.5%	2.0%	NA	1.5%	0.5%

Source: Bloomberg, Nomura.

Alternative trading strategy (2): Backtesting results

Applying this trading strategy to the entire period, we see the results improve significantly. Although there is a trade-off in terms of the number of trades undertaken using this strategy, the returns per trade increase across the signals.

Fig. 33: Performance of trading strategy with minimum benchmark move

	Short Term		Longer Term	
	w/o Threshold	w Threshold	w/o Threshold	w Threshold
Total Trade	1214	413	1221	397
Accuracy of Trade	49.7%	53.0%	51.1%	54.9%
Average Returns per trade (bps)	1.8	7.7	2.7	7.7

Source: Bloomberg, Nomura.

We observe **improvements in both the accuracy of the signals and the average return** upon employing a threshold for a move in the benchmark before placing the trade (Figure 33). Having a threshold move in the benchmark index provides greater confidence of the theme in the market and helps to remove insignificant fluctuations in the benchmark indices that may lead to underperformance of the trading strategy.

Upon drilling down into the results (Figure 34), we observed that this trading strategy becomes more profitable across the different themes we have defined, and for both short-term and the longer-term signals generated.

Fig. 34: Deconstruction of performance for trading strategy with minimum benchmark move

Short Term Signal				
Theme	Number of Trade		Average Return per day (bps)	
	w/o Threshold	w Threshold	w/o Threshold	w Threshold
Commodities	61	9	8.5	10.5
Oil	80	26	-2.7	6.5
Carry	205	205	7.2	7.2
Equities	371	74	-2.5	3.4
Dollar	497	99	2.8	11.8

Longer Term Signal				
Theme	Number of Trade		Average Return per day (bps)	
	w/o Threshold	w Threshold	w/o Threshold	w Threshold
Commodities	54	10	3.8	9.0
Oil	60	27	-3.9	4.7
Carry	196	196	5.1	5.1
Equities	347	55	2.2	5.3
Dollar	564	109	2.8	14.3

Source: Bloomberg, Nomura.

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