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Cross-Asset Dispatches

A Guide to Our Cross-Asset Framework: 2022 Edition

We lay out the various quantitative models and analytical tools that help us to define and communicate our strategic and tactical asset class preferences.

Our cross-asset framework: This is a note on how we approach cross-asset strategy, what we publish, and how we express our strategic and tactical views.

Estimating reward and risk: Our strategic framework combines the 'bottom-up' estimates of our asset class experts and 'top-down' estimates of cycle-adjusted returns, appropriately risk-adjusted using long-term and short-term volatility.

Exhibit 1: Cross-asset strategy snapshot: Consolidating our cross-asset signals

Asset Class	Level As of Jul 07, 2022	N12M Expected Return			CANARI	CAST	CROWDS
		Exp Rtn	/ Vol	Ret/Vol			
Equities							
US (S&P)	3,903	3.0% / 21%	/	0.1	▲	▼	n/a
Europe (MSCI)	1,662	11.4% / 20%	/	0.6	▲	▲	n/a
Japan (TOPIX)	1,882	9.9% / 20%	/	0.5	▲	▲	n/a
EM (MSCI)	994	4.1% / 21%	/	0.2	▼	▲	n/a
Fixed Income							
US 2yr	302	-0.1% / 1%	/	-0.1	▼	▼	n/a
US 10yr	300	-0.2% / 8%	/	0.0	▼	▼	n/a
DBR 10yr	131	0.0% / 8%	/	0.0	▼	▼	n/a
US IG	151	1.3% / 5%	/	0.3	▲	▲	n/a
US HY	539	3.9% / 9%	/	0.4	▲	▲	n/a
EM USD	540	9.4% / 8%	/	1.2	▲	▼	n/a
EM Local	718	3.0% / 6%	/	0.5	▲	▲	n/a
FX							
EURUSD	1.02	2.8% / 9%	/	0.3	▲	▼	n/a
USDJPY	136.0	-1.8% / 10%	/	-0.2	▼	▼	n/a
AUDUSD	0.68	-0.4% / 11%	/	0.0	▼		n/a
USDBRL	5.34	5.5% / 18%	/	0.3	▲	▼	n/a
Commodities							
Oil (Brent)	105	21.9% / 42%	/	0.5	▲		n/a
Gold	1,748	-8.0% / 17%	/	-0.5	▲	▼	n/a
Copper	3.5	8.4% / 26%	/	0.3	▲		n/a
Cross-Asset							
US Eqt v. 10yr		3.2% / 21%	/	0.2	▲		▲
US Eqt v. HY		-0.9% / 16%	/	-0.1		▼	n/a
EM Eqt v. US		1.1% / 20%	/	0.1	▲	▲	
EU Eqt v. US		8.4% / 17%	/	0.5	▲	▲	▼
JP Eqt v. US		7.0% / 24%	/	0.3	▲	▲	▼
US Lrg v. Small		0.0% / 10%	/	0.0	▲	▲	
US 2s10s Flattener		-0.1% / 6%	/	0.0	▲	▼	
Oil vs. Gold		29.9% / 41%	/	0.7	▲		▼

Source: Bloomberg, Morgan Stanley Research forecasts; Note: "Exp Rtn" averages Morgan Stanley forecasts and cycle-adjusted expected returns, relative to cash or Treasuries (credit). For FX and commodities we use just Morgan Stanley forecasts relative to cash. Volatility is the average of 1y implied vol and 10y realised vol. Green/red arrows represent buy/sell signals, respectively. For currencies, signals are based on XXXUSD. For govt bonds, green = yields lower/prices higher. Green/red shading is applied when majority of the signals indicate buy/sell.

Tactical versus strategic allocation – asset class weights and our 'top trades'

portfolio: While our asset allocation framework operates on a 12m horizon, our systematic/tactical models operate in the 'under 12m' window. In addition to strategic weights (on a +10%/-10% scale relative to a set benchmark), we

MORGAN STANLEY & CO. INTERNATIONAL PLC+

Andrew Sheets

STRATEGIST

Andrew.Sheets@morganstanley.com

+44 20 7677-2905

Phanikiran L Naraparaju

STRATEGIST

Phanikiran.Naraparaju@morganstanley.com

+44 20 7677-5065

MORGAN STANLEY & CO. LLC

Serena W Tang

STRATEGIST

Serena.Tang@morganstanley.com

+1 212 761-3380

MORGAN STANLEY & CO. INTERNATIONAL PLC+

Naomi Z Poole

STRATEGIST

Naomi.Poole@morganstanley.com

+44 20 7425-9714

MORGAN STANLEY INDIA COMPANY PRIVATE LIMITED+

Soham Sen

STRATEGIST

Soham.Sen1@morganstanley.com

+91 22 6514-3442

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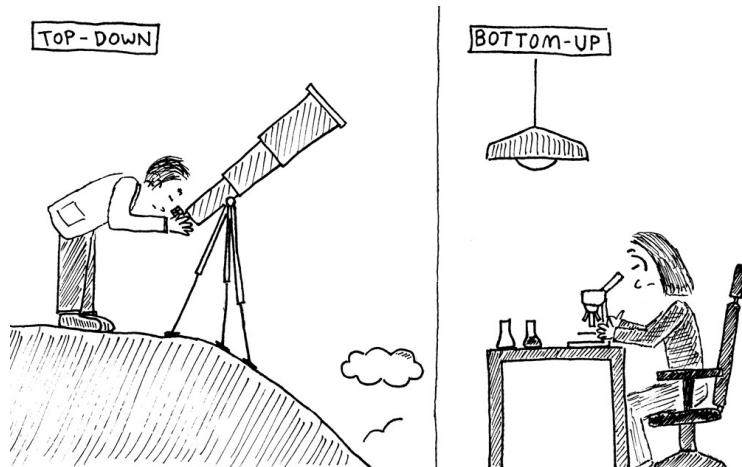
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maintain a set of top cross-asset trades, which are aimed at showing how specific positions achieve overall exposures to markets that we like.

What does our framework say now? Late-cycle risks keep our positioning light across asset classes, with commodities (specifically energy) our only OW. Macro divergences are favourable for expressing relative value ideas. Japan > US equities, UST flatteners versus UKT steepeners, oil > metals, MBS > IG > HY and policy divergence trades in EM are a few examples.



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We hope you enjoyed our work over the last year and thank you for your
readership and support. Please rate us five stars in Cross-Asset Strategy
(Global, US & Europe). ([Vote here](#))**

A Guide to Our Cross-Asset Framework: 2022 Edition

Executive summary

This note provides a guide on how we approach cross-asset strategy, what we publish, and how we express and track our strategic and tactical views.

Who is our research for?

Cross-asset strategy approaches the market as someone who can invest across asset classes and regions. This covers a wide array of actors, from pension funds, to hedge funds, to multi-asset funds, to anyone interested in broader market trends.

Because these groups have different time horizons and constraints, we try to provide a broad set of views, from the tactical to the strategic. Our 'call' broadly falls across two categories:

- **Our strategic allocation (~12m horizon):** This represents our broad view on how to allocate between global equities, credit, government bonds, commodities and cash on a 12-month horizon. We weight assets on a +10%/-10% range relative to a set benchmark. All the weights here need to sum to zero.
- **Our top trades portfolio (~3-6m horizon):** A multi-asset portfolio of specific trades we like, which in aggregate reflects our preferred exposures to equities, duration, USD and commodities. This tends to be more tactical, with higher turnover.

We run both to better serve a wide range of investor types, and while they can diverge every now and then, over time they have been more similar than different. This note will discuss how both our strategic views and tactical ideas are constructed.

How do we collaborate with other Morgan Stanley strategists and analysts?

Collaboration is central to our process, and the input of more than 100 strategists and economists around the globe is an important part of this. Our framework combines top-down model-based return estimates with bottom-up forecasts from our strategy colleagues, using insights across the department to determine how best to allocate capital in the context of a cross-asset portfolio.

Our Framework

Bottom up: Leveraging Morgan Stanley forecasts

One of our competitive advantages is the expertise of Morgan Stanley's more than 100-strong economists and strategists working around the world. As such, incorporating these views is a key part of our approach.

We think that the best way to do so is via 12-month forecasts. When dealing with a range of qualitative market views from an investment team, a forecast distills and quantifies a view. It is a vector, with both direction and magnitude. It is flexible, able to take into account all manner of information about current markets (micro fundamentals, supply and demand, and what's in the price). And it can be tracked, providing a way to quantify success. As such, forecasts are extremely useful.

Exhibit 2: Bottom-up Morgan Stanley strategy forecasts

	As of Jul 07, 2022			Q2 2023 Forecast			Q2 2023 Return Forecast			Average Volatility	Base Case Return/Risk
	Bear	Base	Bull	Bear	Base	Bull	Bear	Base	Bull		
Equities											
S&P 500	3,903			3,350	3,900	4,450	-13%	1.6%	16%	21%	0.08
MSCI Europe	1,662			1,340	1,760	2,000	-16%	9.4%	24%	19%	0.49
Topix	1,882			1,620	2,050	2,370	-11%	11.4%	28%	20%	0.57
MSCI EM	994			890	1,060	1,340	-8%	9.6%	38%	20%	0.47
FX											
USD/JPY	136			125	130	133	-1%	1.0%	5%	10%	0.10
EUR/USD	1.02			1.03	1.10	1.14	-1%	5.6%	10%	9%	0.64
GBP/USD	1.20			1.20	1.28	1.33	-1%	5.7%	10%	10%	0.58
AUD/USD	0.68			0.63	0.70	0.73	-8%	2.4%	7%	11%	0.21
USD/INR	79.2			72.0	74.3	79.0	3%	9.6%	13%	6%	1.49
USD/ZAR	16.7			14.5	14.8	15.3	13%	16.6%	19%	16%	1.03
USD/BRL	5.34			5.20	5.40	5.70	3%	8.3%	12%	18%	0.46
Rates (% percent)											
UST 10yr	3.00			4.00	3.05	2.50	-5%	2.3%	7%	8%	0.30
DBR 10yr	1.31			2.25	1.60	0.90	-7%	-0.7%	6%	8%	-0.09
UKT 10yr	2.13			2.10	2.25	1.65	2%	2.0%	7%	8%	0.79
JGB 10yr	0.24			0.45	0.30	0.05	-1%	0.1%	2%	3%	0.02
Credit (bps)											
US IG	151			175	150	115	0%	1.6%	4%	5%	0.34
US HY	539			625	490	340	0%	6.7%	13%	9%	0.75
EUR IG	111			115	95	65	1%	1.9%	3%	2%	0.79
EUR HY	566			650	550	350	1%	5.9%	12%	7%	0.79
EM Sovs	540			525	410	350	7%	14.9%	19%	7%	1.99
US Agency MBS	44			60	35	25	-1%	1.0%	2%	2%	0.59
Commodities											
Brent	105			75	110	150	-16%	24.7%	70%	41%	0.60
Copper	3.5			3.4	4.0	4.9	-6%	11.2%	39%	26%	0.43
Gold	1,748			1,530	1,700	2,040	-15%	-5.2%	14%	17%	-0.30

Source: Bloomberg, Markit, Morgan Stanley Research forecasts; Note: Vol is a simple average of 1yr implied vol where available (or 1yr realised otherwise), and 10yr realised vol. Commodity returns are based on futures price, to account for carry.

But they're only useful when based on roughly similar scenarios. After all, a bearish high yield forecast that assumes a deep recession and a bullish equity forecast that assumes a recovery don't give you a clear 'cross-asset trade' – they simply reflect wildly different macro expectations. As such, we follow a three-step process:

1. Morgan Stanley's economists set bull, base and bear case forecasts for the economy over the next 12 months, consistent with scenarios that they think have a roughly 20%-60%-20% likelihood of occurring. This matches the bull-base-bear framework used across Morgan Stanley equity research.
2. Morgan Stanley strategists set bull-base-bear targets based on these economic scenarios, all to a similar (~12-month) horizon.
3. We provide transparency on these forecasts (see Morgan Stanley's [macro forecast](#)

[site](#)) and regularly debate and review them to see if they remain on track.

In short, our forecasts should represent a best estimate of return over the next 12 months from our asset class experts, given our economists' expectations.

Top down: Cycle-adjusted returns

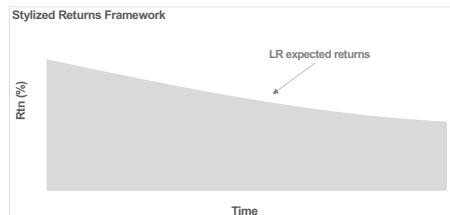
The other way to estimate returns is 'top down', using a model-based approach. We see this as complementary to the 12-month strategist forecasts we've just discussed.

Our goal is to estimate an asset's return by its long-term trend line, and then adjust this for the economic environment.

Part 1 – the trend line: Using our long-run return framework, we generate a trend line for returns. We believe that, within limits, this is the most historically justifiable line for an asset to travel on, based on current valuations – think of this as the best possible estimate without taking a view on the cycle. See [Cross-Asset Dispatches: What Will Markets Return? 2020 Edition](#), December 11, 2020, for more.

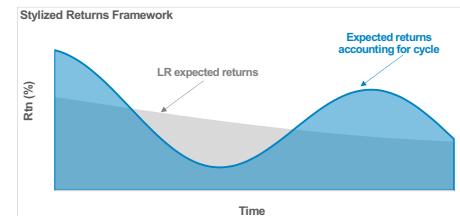
Part 2 – cycle boosts and drags: Assets will overshoot and undershoot this trend line based on swings in that economic cycle. Our cycle model aims to convert this into quantitative adjustments: based on current economic data, should the asset do better or worse than the estimated trend, and by how much? See [Cross-Asset Dispatches: Improving the Cycle Indicator – Countdown to Downturn](#), March 31, 2019, for more.

Exhibit 3: Our stylised cycle-adjusted returns framework – long-run expected returns provide a trend line...



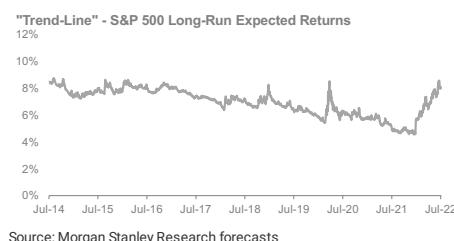
Source: Morgan Stanley Research forecasts

Exhibit 4: ...while cycle boosts and drags 'fine-tune' the forecast



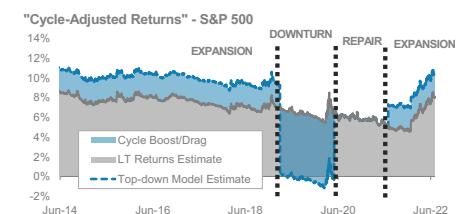
Source: Morgan Stanley Research forecasts

Exhibit 5: 'Trend line' return for the S&P 500 has been relatively range-bound...



Source: Morgan Stanley Research forecasts

Exhibit 6: ...and adding 'cycle boosts and drags' from the cycle fine-tunes the top-down forecast



Source: Morgan Stanley Research forecasts

Exhibit 7: Our top-down forecasts combine our 10y expected return forecasts and our cycle modifier

	LT Return Model		Cycle Model			
	10Y Exp Rtns	Risk Premium	Downturn	Avg Fwd N12M Rtns vs Avg Repair	Expansion	Recovery
EQUITIES						
S&P 500	8%	4%	♦ -7%	▲ 0%	▲ 2%	▲ 2%
MSCI Europe	11%	9%	♦ -8%	♦ -2%	● 3%	● 4%
TOPIX	6%	6%	♦ -8%	♦ -5%	▲ 2%	● 12%
EM	9%	5%	♦ -3%	● 10%	♦ -5%	▲ 1%
GOV'T BONDS						
UST 10Y	4%	-	▲ 2%	▲ 1%	♦ -1%	♦ -2%
DBR 10Y	2%	-	♦ -1%	▲ 1%	♦ -1%	▲ 2%
JGB 10Y	1%	-	♦ -1%	▲ 2%	♦ -1%	♦ 0%
CREDIT (Excess Rtn)						
US IG	5%	1%	♦ -3%	▲ 2%	♦ 0%	▲ 1%
US HY	7%	3%	♦ -7%	● 8%	♦ -2%	▲ 2%
EU IG	3%	2%	♦ -2%	▲ 1%	♦ 0%	▲ 2%
EU HY	6%	4%	♦ -12%	● 10%	♦ -1%	● 3%
EM \$ Credit	7%	3%	♦ -10%	● 4%	▲ 1%	♦ 0%

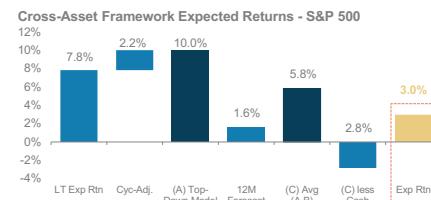
Source: Morgan Stanley Research forecasts

Putting it all together, and adjusting for volatility

Whereas bottom-up strategist forecasts are qualitative, flexible and subjective, model-based forecasts are quantitative, rigid and objective. It's a match made in heaven, and our asset allocation framework balances both of these approaches to answer the simple question – taking into account both qualitative and quantitative approaches, which assets offer the best return over the risk-free rate, adjusted for volatility?

Our framework follows these simple steps – for each asset, we first average the expected return from the bottom-up and top-down models, subtracting the 12-month cash rate to convert all returns into an excess return, and then dividing all returns by volatility. So which 'volatility' to adjust for? We prefer averaging 1-year implied with 10-year realised. The former is fast-moving and market-based. The latter is a slower-moving real-world anchor. We think they complement each other well.

Exhibit 8 and **Exhibit 9** walk through this process for US equities. Our long-run nominal returns estimate of 7.8%, combined with our cycle model's view that this part of the cycle ('expansion') boosts premiums by 2.2% per year, gets us to a top-down excess return forecast of 10.0% for the next 12 months. This compares to our strategists' 12-month total return forecast of 1.6%. Balancing the qualitative and quantitative approaches, we arrive at a cross-asset framework expected excess return of 3.0%. Dividing this by the average of US equities implied 12-month and trailing 10-year volatility (20.5%), we estimate risk/reward for the asset to stand at 0.1x.

Exhibit 8: Example – how we arrive at our framework returns for US equities

Source: Bloomberg, Morgan Stanley Research forecasts

Exhibit 9: Example – how to compute risk/reward for US equities

Source: Bloomberg, Morgan Stanley Research forecasts

In **Exhibit 10**, we repeat the process for every major market in our benchmark to get to a set of risk-adjusted returns that makes it possible to compare across assets apples to apples – or as close as one can anyway under the circumstances.

Exhibit 10: Our cross-asset framework table: Combining top-down and bottom-up approaches

		(A) Top-Down Expected Returns		(B) Bottom-Up 12M Outlook		(C) Avg (A, B) - Cash		(D) (C)/ Vol		MS Asset Allocation vs Benchmark
		Top-Down Exp Rtn	Cycle Boost/Drag	Cycle-Adj Returns	MS Base Case Rtn Forecast	Forecast Excess Rtn	Framework Expected Rtn/Vol			
Equities	US	7.8%	+2.2%	10.0%	1.6%	3.0%	0.1	-2%		
	Europe	11.0%	+3.2%	14.2%	9.4%	11.4%	0.6	+0%		
	Japan	6.4%	+2.2%	8.6%	11.4%	10.1%	0.5	+2%		
	EM	8.8%	-4.5%	4.3%	9.6%	4.1%	0.2	+0%		
Bonds	Treasuries	3.7%	-0.7%	3.0%	2.3%	-0.2%	0.0	+0%		
	Bunds	2.4%	-0.8%	1.5%	-0.7%	0.0%	0.0	-1%		
	EM Local*	-	-	-	5.8%	3.0%	0.5	+0%		
Credit	US IG	1.3%	-0.3%	1.0%	1.6%	1.3%	0.3			
	US HY	2.8%	-1.7%	1.0%	6.7%	3.9%	0.4	-1%		
	EUR IG	1.8%	-0.0%	1.7%	1.9%	1.8%	0.7			
	EUR HY	4.4%	-1.3%	3.0%	5.9%	4.5%	0.6	-1%		
	EM \$ Sov	3.0%	+0.9%	3.8%	14.9%	9.4%	1.2	+0%		
	Agency MBS	0.4%	-0.1%	0.4%	1.0%	0.7%	0.5	+2%		
Securitised^	Securitised^	1.3%	-0.6%	0.8%	2.6%	2.6%	1.7	+0%		
	Commodities	-	-	-	13.9%	11.0%	0.4	+1%		

Source: Morgan Stanley Research forecasts; Note: *EM Local is FX-hedged. ^Securitized is an average of CLO AAA and CMBS AAA. 'Cycle-Adj Returns' shows cycle-adjusted long-term expected returns during the current cycle phase (expansion). All returns for credit are excess returns. 12m cash rate is for the respective region. Our 12m commodity forecast is based on a weighted average of our commodity strategists forecast for oil/gold/copper (50/25/25%).

What does our framework say now?

Which asset classes are offering better- or worse-than-average risk-adjusted return relative to their history today? Where is there a large difference in cross-asset risk-adjusted return?

- Equities:** US stocks screen least favourably on our framework, with risk-adjusted return of just 0.1x, well below historical averages, making it a key UW within the asset class and across asset classes. However, there is large dispersion in equities expected returns. European and Japan equities both produce above-average risk-adjusted returns after recent declines but geopolitical risks keep us cautious on Europe. Our strategy colleagues see US and Europe earnings expectations as too optimistic, and recession risk as yet to be priced in. In comparison, Japan with an equally good risk-adjusted return looks a cleaner story, where the macro backdrop is much more benign, valuations have cheapened, the currency is cheap and financing rates are low.
- Bonds:** In bonds, risk-adjusted returns are close to 0, and well below historical

averages, as strong inflation, rate hikes and flat curves leave limited excess return over cash. We closed our UW in bonds in 2Q22, perhaps a tad early, and remain neutral on the asset class outright, as rates remain trapped between growing growth fears and inflation pressures persisting for longer than anticipated. As with equities, there is dispersion in returns, with EM local expected returns above average, but inflation challenges and geopolitical and idiosyncratic risks leave us neutral for now.

- **Credit:** Credit valuations have improved in recent weeks and risk-adjusted returns are more in line with historical averages or even better in the case of Europe. However, macro headwinds leave our strategy colleagues cautious on credit, as slower growth, elevated inflation and tighter financial conditions weigh on credit markets, and especially lower-quality names. Spreads have widened considerably, with an overshoot to our strategists' bear cases likely before seeing some improvement as we approach 2Q23. This leaves us with an EW in credit despite relatively favourable risk-adjusted returns from our framework.
- **Commodities:** Risk-adjusted return of 0.4 screens well on our framework, both versus its history as well as commodity beta such as EM equities. That said, there is a strong divergence within commodities, with the overweight reflecting a bullish view on energy versus a bearish view on metals.

Asset class weights and our benchmark

Allocating to assets that have the best risk-adjusted expected return seems like a good starting point (see the final column in [Exhibit 10](#)). We allocate on a +10%/-10% range across broad asset classes, based on the cross-asset 'benchmark', comprised of markets we cover within Morgan Stanley Research.

Exhibit 11: What is our benchmark?

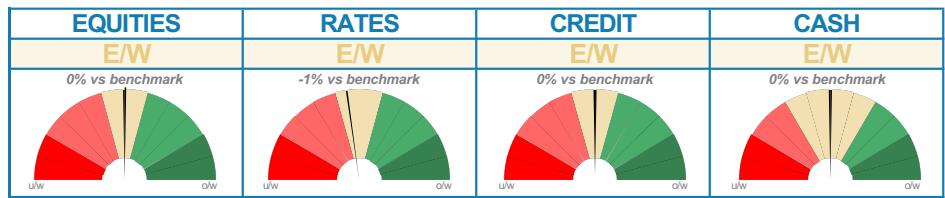
Asset	Sub-Asset	Weight	Returns Index	Sub-Weights
Equities	US Equities	25%	S&P 500	25%
	European Equities	10%	MSCI Europe	10%
	Japan Equities	5%	TOPIX	5%
	EM Equities	10%	MSCI EM	10%
Rates	US Rates	10%	UST 10yr	10%
	European Rates	10%	DBR 10yr	10%
	EM Local	5%	MS EM Local Index*	5%
Credit	US Corporates	6%	US IG Corp (Bloomberg Barclays)	4%
			US HY Corp (Bloomberg Barclays)	2%
	European Corporates	4%	iBoxx EUR IG Corporate Index	2%
			iBoxx EUR HY Index	2%
	EM Sovereigns	3%	EMBI Global Index	3%
Other	Agency MBS	5%	Agency MBS	5%
	Securitized Credit	2%	CLO	1%
			CMBS	1%
	Commodities	2%	MS RADAR Index	2%
	Cash	3%	US Libor 1m	3%

Source: Morgan Stanley Research; *FX-hedged.

We consider +/- 2% to be equal-weight, above and below this overweight and underweight, respectively. All our weights need to sum to zero. Obviously, investors' own benchmarks will likely vary from ours depending on region and asset class focus, but we think that our +10%/-10% underweight/overweight range, as well as the clear

and transparent way we derive our relative allocation, offer value to our wide range of readers.

Exhibit 12: Our current asset allocation



Source: Morgan Stanley Research

Our Regular Publications

We publish our cross-asset views across several publications:

Global Strategy Outlook: Twice a year, the cross-asset team leads the collaborative effort across Morgan Stanley strategy teams to refresh our various price targets, best ideas and asset allocation for the next 12 months.

- [Global Strategy Mid-Year Outlook: The Tempest \(10 May 2022\)](#)
- [2022 Global Strategy Outlook: The Training Wheels Come Off \(14 Nov 2021\)](#)

Quarterly

Fixed Income Rotation Model: Quarterly updates on optimised allocation for USD fixed income, including USD AGG assets, as well as off-benchmark markets like US HY, municipals and CLOs, based on Morgan Stanley strategists' N12M forecasts.

- [Cross-Asset Strategy: US Fixed Income Rotation Model \(FIRM\): 2Q22 \(9 Jun 2022\)](#)

Monthly

Cross-Asset Playbook: Published once a month, covering latest cross-asset views, updated forecasts and top trades.

- [Cross-Asset Playbook: Data Dependent \(17 Jun 2022\)](#)

Global Volatility Playbook: Key volatility views and trades, across assets, monthly.

- [Global Volatility Playbook: Waiting for a Pivot \(28 Jun 2022\)](#)

Global In the Flow: Our comprehensive monthly datapack, covering cross-asset performance, valuations, supply and economic data.

- [Cross-Asset Strategy: Global In the Flow – Second Quarter Recap \(1 Jul 2022\)](#)

US AGG+ and CORE+ Optimal Portfolios: Highlights changes in our USD AGG+ and CORE+ optimal portfolios, based on N12M and long-run expected returns on liquid USD fixed income assets.

- [Cross-Asset Dispatches: AGG+ and CORE+ Optimal Fixed Income Portfolios: June 2022 \(24 Jun 2022\)](#)

Weekly

Cross-Asset Dispatches: Published most weeks, covering topical cross-asset themes.

- [Cross-Asset Dispatches: Where Are Risk Premiums Now? \(24 Jun 2022\)](#)

- [Cross-Asset Dispatches: Bear Market Almanac 2022 Edition – Taking 'Paws' \(27 May 2022\)](#)

Cross-Asset Spotlights – Signals, Flows & Correlations: Published most weeks, providing latest updates from our various models and datasets, including a summary of weekly ETF flows, the COVA framework and cross-asset correlation.

- [Cross-Asset Spotlight: Signals, Flows & Key Data \(4 Jul 2022\)](#)

Cross-Asset Spotlights – Systematic Strategies: Published most weeks, highlighting latest updates from our systematic models, CAST and CANARI.

- [Cross-Asset Spotlight: Systematic Strategies \(CAST\): More Commodities Derisking \(7 Jul 2022\)](#)

Podcasts and webcasts

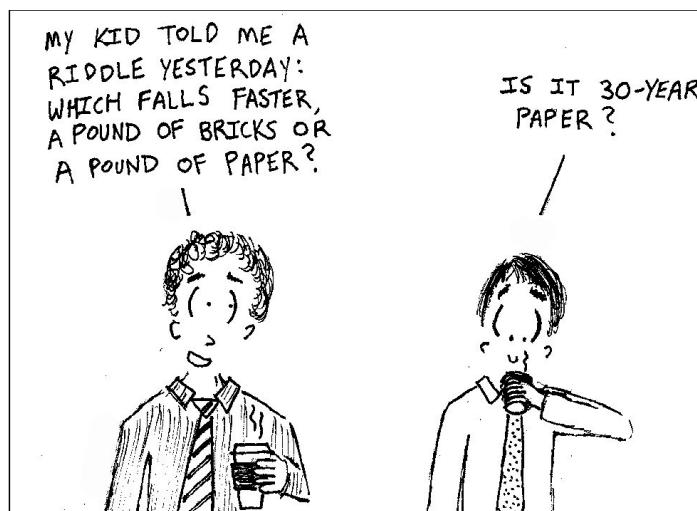
Thoughts on the Market: Andrew Sheets gives his insights on the latest topical debates.

- [Thoughts on the Market: U.S. Fixed Income: When Will the Treasury Market Rally? \(29 Jun 2022\)](#)
- [Thoughts on the Market: Andrew Sheets: Balance Sheets Take a Back Seat \(17 Jun 2022\)](#)

Cross-Asset Conversations: Serena Tang hosts guests from across Morgan Stanley Research to highlight some of our latest thoughts on different markets.

- [Podcast: Cross-Asset Conversations: Latest Views on European Equities | Ep. 42 \(24 Jun 2022\)](#)
- [Podcast: Cross-Asset Conversations: Latest Views on Corporate Credit | Ep. 41 \(17 Jun 2022\)](#)

From time to time, we even draw some cartoons:



Our Key Cross-Asset Models and Tools

Long-term capital market assumptions

Analyst: Serena Tang

What is it/how is it used?

Our long-run capital markets assumptions form the basis of our cycle-adjusted returns used in our asset allocation framework. This set of expected returns is cited frequently in our reports as valuation metrics (e.g., are equity risk premiums elevated versus history?), and used in our portfolio optimisation exercises.

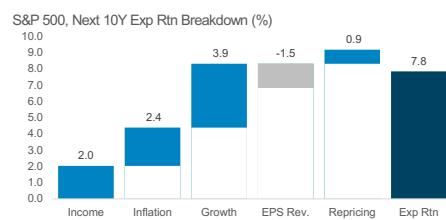
Methodology

Our **long-run expected return for equity indices** decomposes return into three components:

$$\text{Next10YReturn} = \text{Income} + \text{EarningsGrowth} + \text{Repricing}$$

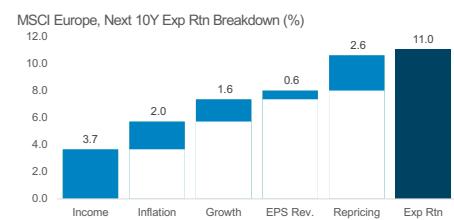
The first, 'Income', represents the return from dividends and is estimated as long-run payout x earnings yield. The second, 'Earnings Growth', measures the return to investors due to an increase in earnings for a given multiple and is broken down into inflation, real earnings trend growth and earnings trend reversion. Drilling down further, for inflation, we use 10Y breakevens as a proxy; real earnings trend growth is calculated from regression on log real earnings; and earnings reversion is estimated from the gap between trend and today's real earnings. Last but not least, the 'Repricing' component comprises the return to investors from multiple expansion or contraction and is estimated by assuming that in every period trailing P/E will end up at some long-run sector-adjusted P/E level over time.

Exhibit 13: Long-run expected return breakdown example – S&P 500



Source: Bloomberg, Morgan Stanley Research forecasts

Exhibit 14: Long-run expected return breakdown example – MSCI Europe



Source: Bloomberg, Morgan Stanley Research forecasts

Our **long-run expected return for fixed income** is based on the 'rolling yield' framework introduced by Martin Leibowitz (see [Portfolio Strategy: Rolling Yields and Return Convergence](#), March 4, 2014), which posits:

$$\text{Next10YReturn} = \text{StartingYield} + \text{RolldownReturn} - \text{AverageCreditLoss}$$

The main difference between the models for government bonds and credit is the 'Credit Loss' component; for risk-free government bonds, we assume no credit loss, while for

bonds with a credit component, we assume expected credit loss to be similar to what's been realised through history, based on the asset's current ratings mix and time to maturity.

Exhibit 15: Fixed income long-run expected return – UST 10Y



Source: Bloomberg, Morgan Stanley Research forecasts

Exhibit 16: Fixed income long-run expected return – US IG corporate credit



Source: Bloomberg, Morgan Stanley Research forecasts

Exhibit 17: Morgan Stanley 10-year expected return forecasts across asset classes

Market	10Y Nominal Expected Returns						Risk Premium		
	Latest		Components			vs History	Latest		vs History
	Exp Rtn (ER)	ER	(A) Income	(B) Earnings	(C) Repricing	ER Z-Score	Risk Prem. (RP)	RP	RP Z-Score
EQUITIES									
S&P 500	7.8	■	2.0	4.8	0.9	■ ■ ■	4.2	■	■ ■ ■
MSCI Europe	11.0	■	3.7	4.4	2.6	■ ■ ■	8.7	■	■ ■ ■
MSCI UK	11.1	■	4.0	4.3	2.4	■ ■ ■	8.1	■	■ ■ ■
MSCI JP	6.4	■	2.4	-0.6	4.5	■ ■ ■	5.7	■	■ ■ ■
MSCI EM	8.8	■	2.8	6.5	-0.6	■ ■ ■	5.1	■	■ ■ ■
GOVERNMENT BONDS									
UST 10Y	3.7	■	3.0	0.7	0.0	■ ■ ■	1.3	■	■ ■ ■
DBR 10Y	2.4	■	1.3	1.1	0.0	■ ■ ■	0.3	■	■ ■ ■
JGB 10Y	0.8	■	0.2	0.5	0.0	■ ■ ■	-0.1	■	■ ■ ■
FIXED INCOME & CREDIT (USD)									
USD Agg	3.9	■	3.7	0.3	0.1	■ ■ ■	0.2	■	■ ■ ■
USD IG	5.1	■	4.7	0.6	0.2	■ ■ ■	1.3	■	■ ■ ■
USD HY	6.6	■	8.6	0.1	2.0	■ ■ ■	2.8	■	■ ■ ■
USD BBB	5.1	■	5.0	0.5	0.4	■ ■ ■	1.4	■	■ ■ ■
USD BB	5.8	■	6.9	0.0	1.0	■ ■ ■	2.0	■	■ ■ ■
USD B	6.9	■	9.3	0.1	2.3	■ ■ ■	3.1	■	■ ■ ■
FIXED INCOME & CREDIT (EUR)									
EUR Agg	2.1	■	2.0	0.3	0.1	■ ■ ■	0.1	■	■ ■ ■
EUR IG	3.2	■	3.0	0.4	0.2	■ ■ ■	1.8	■	■ ■ ■
EUR HY	5.6	■	7.4	0.0	1.7	■ ■ ■	4.4	■	■ ■ ■
EUR BBB	3.6	■	3.4	0.4	0.3	■ ■ ■	2.1	■	■ ■ ■
EUR BB	5.3	■	6.4	0.0	1.0	■ ■ ■	4.2	■	■ ■ ■
EUR B	6.4	■	9.1	0.0	2.4	■ ■ ■	5.2	■	■ ■ ■
EM \$ CREDIT									
Global	6.7	■	7.2	0.4	0.8	■ ■ ■	3.0	■	■ ■ ■
Asia	6.2	■	6.6	0.3	0.6	■ ■ ■	2.4	■	■ ■ ■

Note:
Data as of Fri 08 July 2022

Source: Bloomberg, Morgan Stanley Research forecasts

Update frequency: Weekly

Where to find it: [Cross-Asset Spotlight: Signals, Flows & Key Data](#)

Related report(s):

- [Cross-Asset Dispatches: Where Are Risk Premiums Now? \(24 Jun 2022\)](#)
- [Cross-Asset Dispatches: What Will Markets Return? - 2021 Edition \(25 Oct 2021\)](#)
- [Cross-Asset Dispatches: What Will Markets Return? 2020 Edition \(11 Dec 2020\)](#)

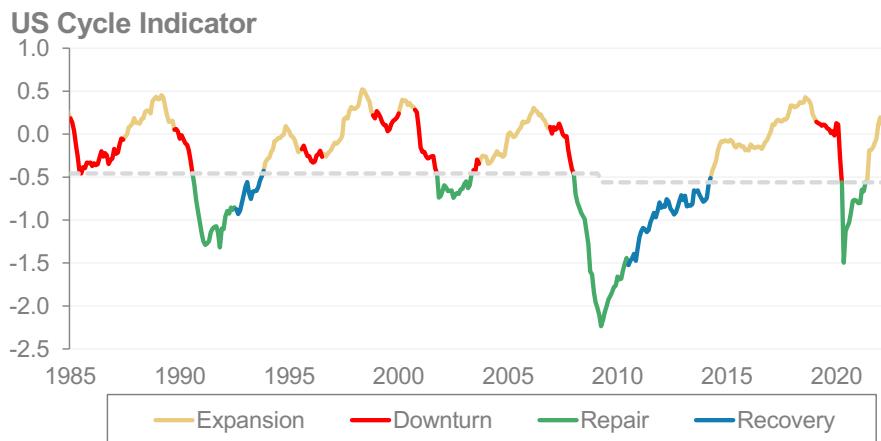
US cycle indicator

Analysts: Naomi Poole, Serena Tang

What is it/how is it used?

The Morgan Stanley US cycle indicator combines metrics across macro, the credit cycle and corporate aggression to pinpoint where we are in the market cycle.

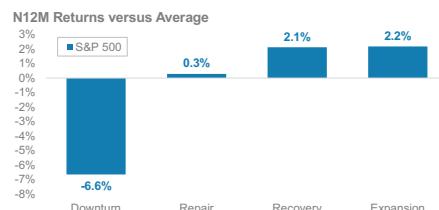
Exhibit 18: The US cycle indicator – currently flagging 'expansion'



Source: Bloomberg, Datastream, Haver Analytics, Morgan Stanley Research

The phase of our cycle indicator informs us how assets may perform, and which market segment investors should rotate to. For example, when the US cycle indicator announced 'downturn' in mid-2019, which suggested elevated market and recession risk over the following 12 months, this framework led us to cut exposure to equities to underweight, and allowed us to be better prepared for the volatility that was to come. Similarly, when the indicator switched to repair in April 2020, it motivated us to upgrade risk, especially in credit, where historically this part of the cycle has lifted returns. In June 2021, we then moved UW government bonds on the back of the switch to 'expansion'.

Exhibit 19: US stocks returns versus average across the cycle



Source: Bloomberg, Datastream, Haver Analytics, Morgan Stanley Research

Exhibit 20: US HY excess returns versus average across the cycle



Source: Bloomberg, Datastream, Haver Analytics, Morgan Stanley Research

Methodology

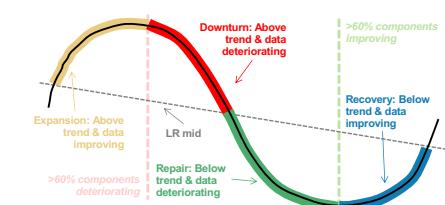
The indicator is calculated as a weighted average of various metrics' long-run Z-scores – this gives us the level which tells us how strong or weak the data are versus history, a

proxy for how stretched or slackened the cycle is. We then use a rules-based approach to determine the phase of the cycle – if data are stronger than average and improving, it's expansion, if they are stronger than average but deteriorating, it's downturn, etc. For a more in depth discussion of the methodology, see [Cross-Asset Dispatches: Improving the Cycle Indicator – Countdown to Downturn](#), March 31, 2019.

Exhibit 21: US cycle indicator components

	Z Score	
	Today	6M Ago
2s10s Yield Curve	1.0	0.4
Conference Board Cons. Confidence, 3MMA	0.3	0.7
Initial Jobless Claims 4W MA, 3MMA	0.9	0.7
ISM Manufacturing Production Index	-0.1	0.2
Personal Income YoY, 3MMA	-2.1	-0.9
Unemployment Rate	1.3	1.0
Consumer Loans 12M Chg, 3MMA	1.0	0.3
Real Estate Loans 12M Chg, 3MMA	-0.4	-1.0
Mergers and Acquisitions	-0.7	-0.7
Fin Bond Issue 12M Chg, 3MMA	0.6	0.9

Source: Bloomberg, Datastream, Haver Analytics, Morgan Stanley Research

Exhibit 22: US cycle indicator phase rules

Source: Morgan Stanley Research

Update frequency: Monthly

Where to find it:

- [Cross-Asset Strategy: Global In the Flow](#)
- [Cross-Asset Playbook](#)

Related report(s):

- [Cross-Asset Dispatches: Improving the Cycle Indicator – Countdown to Downturn \(31 Mar 2019\)](#)
- [Cross-Asset Dispatches: Our Cycle Indicator: Fast and Furious Expansion \(16 Jul 2021\)](#)
- [Cross-Asset and US Equity Strategy: Speeding Through A Hotter But Shorter Cycle \(18 Mar 2022\)](#)

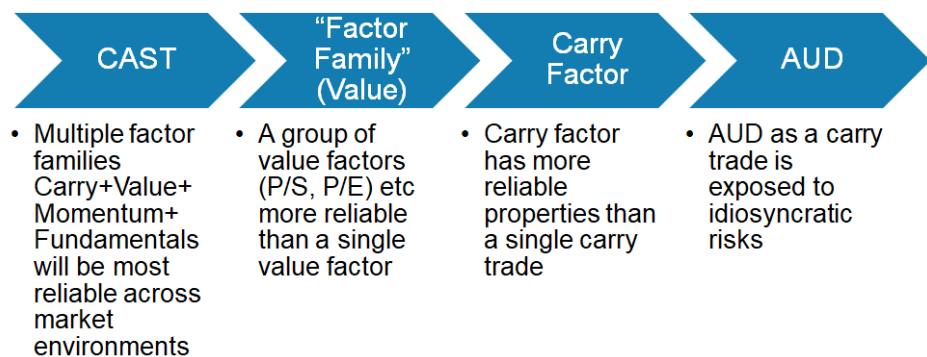
Cross-Asset Systematic Trading Strategy (CAST)

Analyst: Phanikiran Naraparaju

What is it/how is it used?

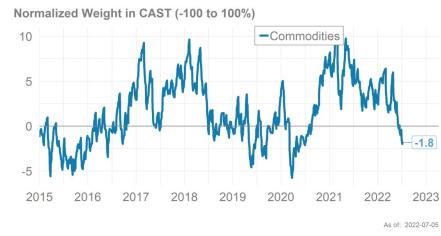
CAST looks at the world through the lens of systematic factors. CAST (Cross-Asset Systematic Trading strategy) is an all-weather multi-asset combination we have created from 1,500+ systematic cross-sectional and time-series factors across 15 asset groups.

Exhibit 23: The CAST approach



Source: Morgan Stanley Research

Exhibit 24: CAST commodity net short deepens, the largest since 2H20



Source: Morgan Stanley Research

Exhibit 25: Long DXY is one of the key core views for CAST

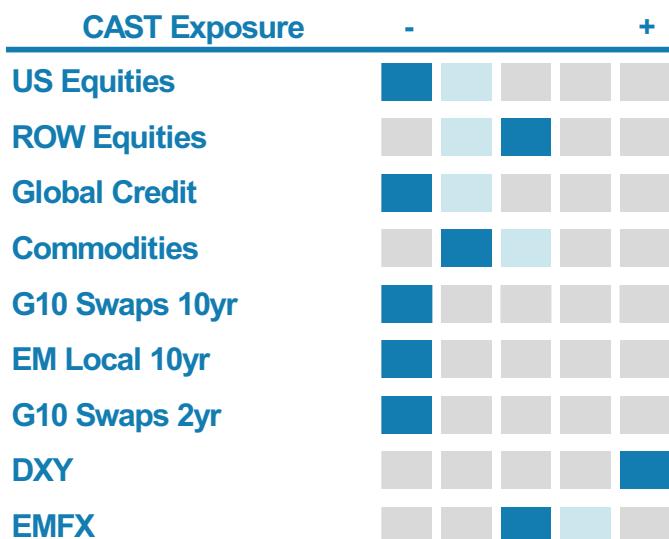


Source: Morgan Stanley Research

Exhibit 26: CAST scorecard for commodities

	CAST Wt	Rank Δ1m	Factor Family			
			CAR	PMO	VAL	FUN
Natural Gas	1.7%	▲ 2	●	●	●	●
Live Cattle	1.6%	▲ 4	●	●	●	●
Lean Hogs	1.1%	▼ -2	●	●	●	●
WTI	1.0%	▼ -2	●	●	●	●
Feeder Cattle	0.7%	▲ 8	●	●	●	●
Soybean Meal	0.5%	▲ 4	●	●	●	●
Sugar	0.5%	▲ 4	●	●	●	●
Zinc	0.4%	▲ 10	●	●	●	●
Cocoa	0.2%	▼ -5	●	●	●	●
Coffee	0.2%	▲ 5	●	●	●	●
Gasoil	0.1%	▼ -6	●	●	●	●
Platinum	0.0%	▲ 2	●	●	●	●
Brent	0.0%	▼ -1	●	●	●	●
Aluminium	0.0%	▲ 7	●	●	●	●
Cotton	0.0%	▼ -6	●	●	●	●
Copper	-0.1%	0	●	●	●	●
Palladium	-0.2%	▲ 2	●	●	●	●
RBOB (Gasoline)	-0.2%	▼ -11	●	●	●	●
Kansas Wheat	-0.2%	▲ 4	●	●	●	●
Heating Oil	-0.3%	▼ -12	●	●	●	●
Corn	-0.5%	▲ 7	●	●	●	●
Silver	-0.6%	▼ -5	●	●	●	●
Nickel	-0.7%	▲ 2	●	●	●	●
Gold	-0.8%	▲ 2	●	●	●	●
Soybeans	-0.8%	▼ -5	●	●	●	●
Wheat	-0.8%	▲ 1	●	●	●	●
Iron Ore	-1.0%	▼ -5	●	●	●	●
Soybean Oil	-1.2%	▲ 1	●	●	●	●
Lumber	-2.1%	▼ -5	●	●	●	●

Source: Morgan Stanley Research

Exhibit 27: CAST exposures summary

Source: Morgan Stanley Research

Methodology

Factor combinations have more reliable return characteristics than single assets: for example, the G10 FX carry factor is more reliable, and less prone to idiosyncratic risk, than AUD. Furthermore, a family of 'value' factors (price/earnings, price/sales, price/book, forward P/E, earnings yield - bond yield) will be collectively more reliable than a single value factor (price/earnings, etc.). Finally, combining diverse factor clusters ('value family', 'carry family', 'momentum family', 'fundamental trends', etc.) results in more consistent returns across different market regimes. CAST does exactly this – it's an all-weather multi-asset combination we have selected from building blocks of 1,500+ systematic cross-sectional and time-series factors, across 15 asset groups.

However, CAST is just one combination of the many that can be constructed from this universe of factors. We show how the recipe can be tailored to better suit specific market environments, e.g., 'inflation CAST', by choosing the best-performing factors for a rising inflation backdrop. The CAST cookbook can offer insight into:

1. The 'personality' of the asset class: Every asset class is dominated by different factors/factor family. Beware when you are going 'against the grain' of the asset class.
2. Which metrics are useful and which aren't: We identify best-performing factors by asset class and show detailed performance stats on the 1,500+ factors.
3. Which is the most/least attractive asset to own across asset classes? CAST reduces a lot of data into a single signal for all asset classes.
4. How much beta versus alpha exposure to run in different asset classes: CAST can be used to guide when to run more beta exposure and when to run more RV or alpha exposure.

5. Which factors perform in different environments? The factor almanac discusses best-performing factors in different regimes. We can construct a portfolio of factors for specific environments, e.g., 'inflation CAST', 'defensive CAST'.

Update frequency: Weekly

Where to find it:

- [Cross-Asset Spotlight: Systematic Strategies \(CAST\)](#)
- [Cross-Asset Spotlight: Signals, Flows & Key Data](#)

Related report(s):

- [Systematic Strategies \(CAST\) Mid-Year Outlook: Safe Harbour \(13 May 2022\)](#)
- [Cross-Asset Dispatches: Cross-Asset Systematic Trading \(CAST\): 2022 Edition \(28 Jan 2022\)](#)
- [Cross-Asset Strategy: CAST Cookbook – Which Factors Work, and When \(21 Jun 2021\)](#)

Cross-Asset Normalized Risk Indicators (CANARIs)

Analyst: Phanikiran Naraparaju, Serena Tang

What is it/how is it used?

CANARIs attempt to answer the very simple question of *are the latest data good or bad for the outlook of this market over the next few months* by distilling proven buy and sell signals for each asset over specific time horizons into one metric.

CANARIs give clear signals on whether the tactical outlooks for various assets are positive, neutral or negative, and inform us of the timing and potential risks of our asset allocation recommendations. For example, if our cycle-adjusted models are constructive on credit strategically, but the CANARIs are flashing warning signals over the next one-month horizon for the asset, we may wait it out before adding exposure. Additionally, where an asset's CANARI outlook differs significantly from our strategists' views, it could very well be that there are interesting structural/thematic changes that our systematic model which is based on historical relationships can't pick up, but are worth highlighting; CANARIs would help us to pick up these inconsistencies more easily.

Exhibit 28: ACWI 3M CANARI

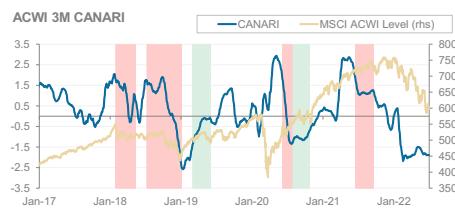
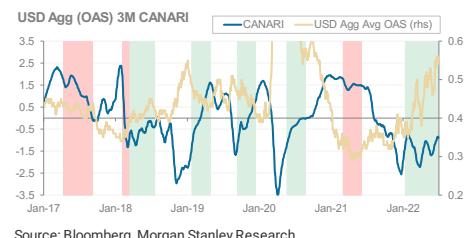
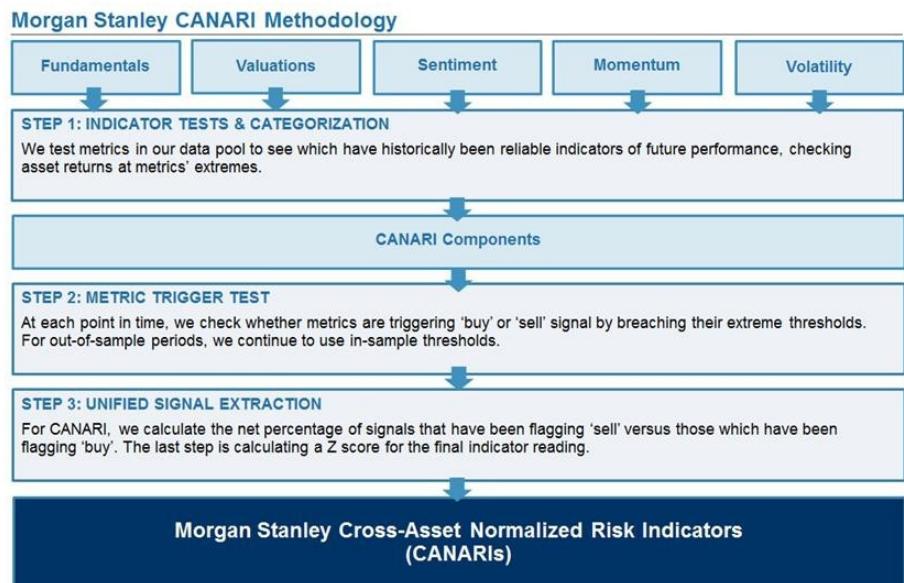


Exhibit 29: USD AGG 3M CANARI



Methodology

The model systematically examines ~2,500 metrics across fundamentals, valuations, sentiment, momentum and volatility to determine what has been historically relevant for gauging forward returns, then measures the net share of positive and negative signals at each point in time. In general, a higher CANARI reading (more sell signals versus buy signals compared to history) is deemed as being worse for forward performance, on a rolling basis, and a lower reading (fewer sell signals versus buy signals compared to history) as being better for future returns.

Exhibit 30: CANARIs methodology

Source: Morgan Stanley Research

Update frequency: Weekly**Where to find it:**

- [Cross-Asset Spotlight: Signals, Flows & Key Data](#)
- [Cross-Asset Spotlight: Systematic Strategies \(CAST\)](#)

Related report(s):

- [Cross-Asset Dispatches: CANARIs – A Tool for Systematic Tactical Asset Allocation \(22 Sep 2019\)](#)

Composite Sigma Indicator (CSI)

Analyst: Phanikiran Naraparaju

What is it/how is it used?

The 'Composite Sigma Indicator' (CSI) seeks to quantify extreme market moves over time.

Exhibit 31: Composite Sigma Indicator since 2005



Source: Bloomberg, Morgan Stanley Research

Exhibit 32: Composite Sigma Indicator in the last 5 years



Source: Bloomberg, Morgan Stanley Research

Methodology

We start with ~250 'assets' across global equities, credit, commodities, FX and interest rates (nominals, breakevens and curves). The goal is to cover a wide set of assets across EM and DM that a multi-asset investor may trade (or that a trading operation may manage). We focus on daily moves, trying to capture real 'breakage' that could pose challenges for risk management. For each asset, we calculate its daily move as a standard deviation relative to the prior five years. We construct a weighted average of these standard deviations across the 20 largest daily moves, a weighting that helps to capture more extreme and idiosyncratic moves.

Update frequency: Weekly

Where to find it: [Cross-Asset Spotlight: Signals, Flows & Key Data](#)

Related report(s):

- [Cross-Asset Dispatches: A Duck of a Market \(5 Nov 2021\)](#)

Market Sentiment Indicator (MSI)

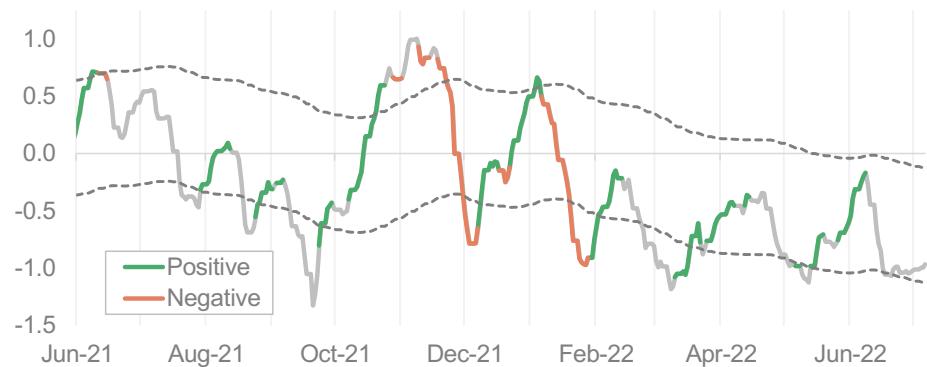
Analyst: Naomi Poole

What is it/how is it used?

The MSI aims to provide tactical (<1m) guidance on 'risky assets' (MSCI ACWI), flagging 'risk on' and 'risk off' opportunities.

Exhibit 33: Market Sentiment Indicator

Market Sentiment Indicator (MSI)



Source: Bloomberg, Datastream, Morgan Stanley Research

Methodology

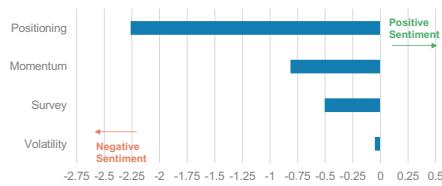
Our Market Sentiment Indicator (MSI) aggregates ten metrics covering survey, volatility, positioning and momentum data to capture investor sentiment. The metrics (shown in [Exhibit 35](#)) rank highly across a number of tests:

1. Do extreme levels produce risk asset returns that are statistically better/worse than average?
2. Do opposite extremes give different signals for forward returns? For example, does negative sentiment produce above-average returns, and positive sentiment produce below-average returns? We are aiming to collate metrics that reinforce each other, and so want to select metrics that exhibit a similar risk asset return pattern across sentiment metric buckets.
3. Are hit rates different at extremes? Ideally, above-average returns should coincide with higher hit rates, and below-average returns should coincide with lower hit rates.
4. Does the metric have some explanatory power for forward returns? The higher the R² over the in-sample period, the better. Unlike our CANARI construction, we aren't aiming to identify metrics that matter only at extremes.
5. On average, does the metric have a reasonably high rolling six-month correlation to forward returns?

We then combine the selected metrics into one aggregate sentiment measure by

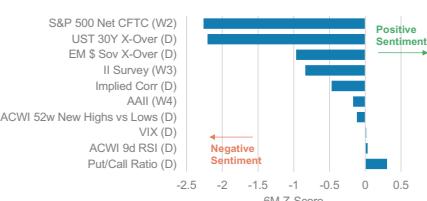
weighting each of the four groups (survey, volatility, positioning and momentum) equally. While we want an indicator that is timely in providing signals, we also don't want it to oscillate excessively. We smooth the indicator by computing a five-day exponential moving average.

Exhibit 34: Current indicator reading by group



Source: Bloomberg, Datastream, Morgan Stanley Research

Exhibit 35: Current indicator reading by metric



Source: Bloomberg, Datastream, Morgan Stanley Research; Note: W2 = weekly updates (every Tuesday), W4 = weekly updates (every Thursday), D = daily updates.

We construct risk-on/risk-off signals based on both the level and the change of our MSI:

- **Level:** The threshold levels of the indicator are determined by creating bounds (+/- 0.5) around the six-month exponential moving average of the indicator. We find that thresholds that move with the indicator itself better capture the extremes than fixed thresholds. A risk-on/risk-off signal is only struck if the indicator has been below/above the lower/upper threshold over the past 22 working days.
- **Change:** If the first condition is met, we strike a signal based on the three-day change of the indicator. For example, if the indicator has been below the lower threshold, and is rising, we consider this to signal risk on. As our indicator is smoothed (a five-day exponential moving average), we found a shorter window (for measuring change) to be more timely in signal generation. At the same time, striking a signal based on daily changes would mean that signals are less persistent (frequently flashing between signal and no signal).

Update frequency: Weekly

Where to find it:

- [Cross-Asset Spotlight: Signals, Flows & Key Data](#)
- On Bloomberg under the following tickers
 - **MSXAMSIL Index** – Morgan Stanley Market Sentiment Indicator Level
 - **MSXAMSI Index** – Morgan Stanley Market Sentiment Indicator Signal

Related report(s):

- [Cross-Asset Dispatches: Introducing Our Market Sentiment Indicator \(MSI\) \(29 Apr 2022\)](#)
- [Cross-Asset Brief: MSI Turns Positive \(17 May 2022\)](#)

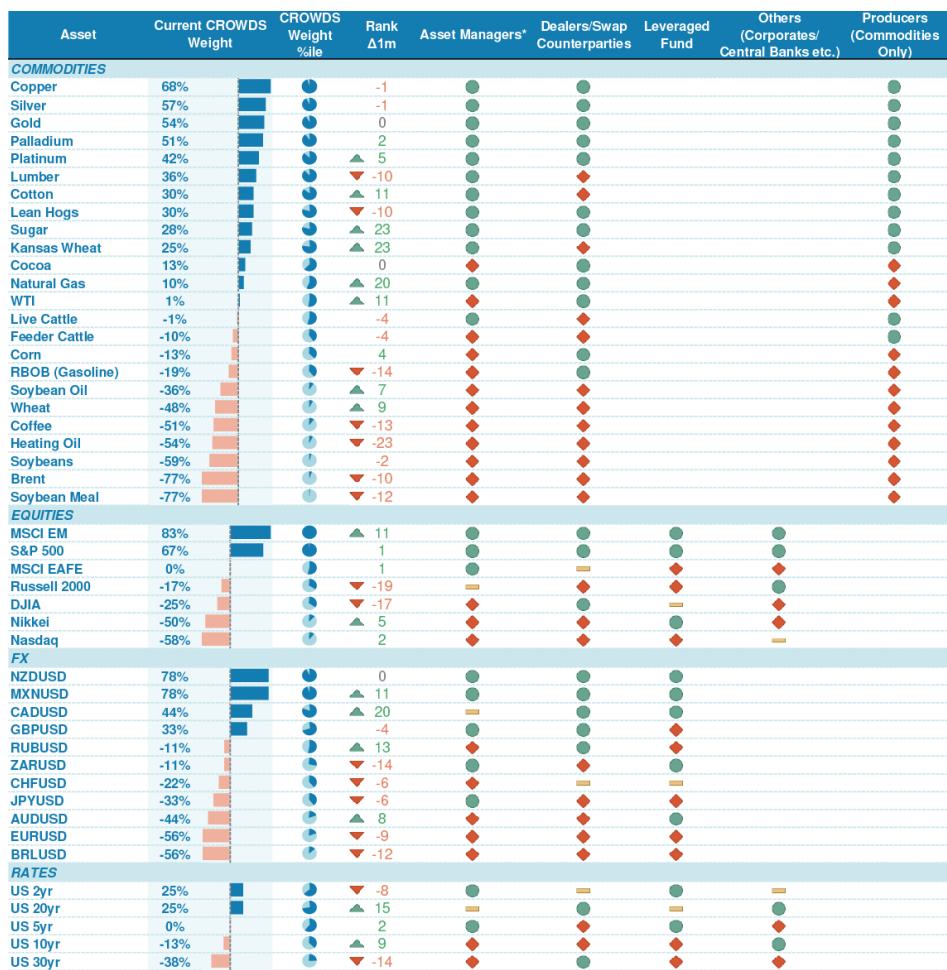
Cross-Asset Crowding Strategy (CROWDS)

Analyst: Phanikiran Naraparaju

What is it/how is it used?

CFTC data are a valuable resource for cross-asset positioning, existing across asset classes and regions, have a long history, are computed in a consistent, timely basis and come from a reliable, public source. Our systematic Cross-Asset Crowding Strategy (CROWDS) leverages these positioning data, combining positioning factors across asset classes to look for cheap, less crowded alternatives which may outperform in the short term, while avoiding assets where positioning looks more extreme.

Exhibit 36: Our current CROWDS scorecard



Source: CFTC, Morgan Stanley Research; Note: Overall CROWDS weight is a simple average of the weights in each of the relevant market participant groups. These are based on normalised weights and range from -100% to 100%. Green dot represents a long signal, red dot represents a short signal and yellow dash represents neutral. Pie charts show current CROWDS weight as a percentile of its entire history (including in-sample period). *We use non-commercial as a proxy for asset managers for commodities.

Methodology

The model ranks assets based on the 1Y Z-score of net positioning (as a % of open interest) across different market participant groups (asset managers/managed money funds, leveraged funds, dealers/swap counterparties, others and non-reportables) and constructs long/short cross-sectional portfolios which go long/short assets with the

most extreme long/short positioning relative to the past one year.

Based on its in-sample performance (from 2007 to end-2015), we define the direction (momentum/contrarian) of each positioning factor for each asset class. [Exhibit 37](#) shows a summary of signals of different market participants' positioning in different asset markets. For example, asset manager positioning works as a contrarian signal for equities while dealer positioning works as a momentum indicator. CROWDS then aggregates the signals for each market participant group (based on the current 1Y Z-score and the direction of the signal) into an overall CROWDS weighting.

Exhibit 37: Are the positioning signals contrarian or momentum?

Market Participants	Equities	Rates	G10 FX	EM FX	Commodities
Asset Mgr*	Contrarian	Contrarian	Contrarian	Momentum	Contrarian
Leveraged Funds	Contrarian	Momentum	Contrarian	Contrarian	-
Dealer	Momentum	Momentum	Momentum	Momentum	Momentum
Other Reportables	Momentum	Contrarian	-	-	-
Producers (Commod)	-	-	-	-	Momentum

Source: Morgan Stanley Research; *For commodities, we use non-commercial as a proxy for asset managers' positioning.

Update frequency: Weekly

Where to find it: [Cross-Asset Spotlight: Signals, Flows & Key Data](#)

Related report(s):

- [Cross-Asset Dispatches: Wisdom of the Crowds \(11 Mar 2021\)](#)

Fixed Income Rotation Model (FIRM)

Analyst: Serena Tang

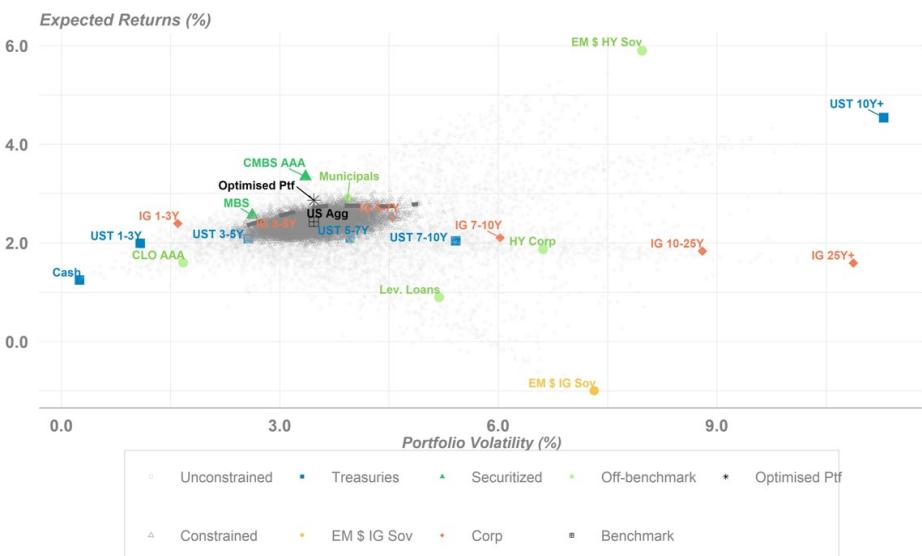
What is it/how is it used?

The US Fixed Income Rotation Model (FIRM) seeks to answer the question – what is the optimal asset allocation for an investor aiming to beat the USD Bloomberg Barclays Aggregate Bond benchmark ('US AGG')? It uses Morgan Stanley strategists' expected return targets as primary inputs to come up with an optimal portfolio allocation recommendation. Unlike AGG+ and CORE+ portfolios, FIRM focuses on the whole of the US fixed income space, including off-AGG benchmark assets like US HY, municipals and CLOs.

Methodology

Using Morgan Stanley's next 12M expected returns and trailing 10Y covariance, we perform Markowitz mean-variance portfolio optimisation, attempting to solve for a set of asset weights which maximises portfolio expected returns, subject to a target volatility level and weight constraints. The optimal portfolio with annualised volatility similar to USD AGG is considered the FIRM portfolio.

Exhibit 38: Risk/reward scatter of US fixed income assets as of June



Source: Bloomberg, Morgan Stanley Research forecasts; Note: Allocation and expected returns as of June 9.

Exhibit 39: FIRM portfolio as of June was EW US Treasuries, EW EM \$ IG sovereigns, EW MBS, UW IG corporates, OW off-benchmark

ALLOCATION vs MARKET VALUE	ALLOC.	Wght		MS N12M Exp Rtn (%)	MS N12M Risk Reward	T10Y Volatility	Yld	OAS
		++	Opt Ptf	MV				
US AGG	-			2.4	0.7	3.5	3.6	47
FIRM OPT PORTFOLIO	-			2.8	0.8	3.5	3.9	90
US TREASURY	US TREASURY	35%	34%	2.8	0.7	3.8	3.0	~
	UST 1-3Y	13%	11%	2.0	1.4	2.7	2.7	~
	UST 3-5Y	4%	7%	2.1	0.7	2.6	3.0	~
	UST 5-7Y	4%	5%	2.1	0.5	4.0	3.1	~
	UST 7-10Y	3%	3%	2.0	0.3	5.4	3.0	~
	UST 10Y+	12%	7%	4.5	0.4	11.3	3.4	~
EM \$ IG SOV	EM \$ IG SOV	1%	1%	-1.0	-0.1	7.3	4.5	141
	EM \$ IG SOV	1%	1%	-1.0	-0.1	7.3	4.5	141
SECURITIZED	SECURITIZED	26%	26%	2.6	0.7	2.6	3.7	41
	MBS	23%	24%	2.6	0.7	2.6	3.6	37
	CMBS AAA	3%	2%	3.3	0.9	3.3	4.0	99
IG CORPORATES	IG CORPORATES	15%	21%	2.0	0.3	5.6	4.4	129
	IG 1-3Y	5%	4%	2.4	1.4	1.6	3.5	73
	IG 3-5Y	4%	4%	2.4	0.7	3.3	4.1	102
	IG 5-7Y	3%	2%	2.5	0.5	4.5	4.4	130
	IG 7-10Y	1%	4%	2.1	0.3	6.0	4.6	151
	IG 10-25Y	1%	4%	1.8	0.2	8.8	4.9	165
	IG 25Y+	1%	3%	1.6	0.1	10.9	4.8	154
OFF-BENCHMARK	OFF-BENCHMARK	21%	19%					
	HY	4%	5%	1.9	0.3	6.6	7.3	406
	Lev. Loans	2%	5%	0.9	0.2	5.2	5.8	470
	CLO AAA	2%	1%	1.6	1.1	1.7	4.7	167
	EM \$ HY Sov	8%	3%	5.9	0.7	8.0	7.0	394
	Municipals	5%	5%	2.9	0.6	3.9	2.9	~
CASH	CASH	2%	0%	1.2	7.7	0.2	1.2	-4

Source: Bloomberg, Morgan Stanley Research forecasts; Note: Allocation and expected returns as of June 9.

Update frequency: Quarterly

Where to find it: Cross-Asset Strategy: US Fixed Income Rotation Model (FIRM)

Related report(s):

- [Cross-Asset Strategy: US Fixed Income Rotation Model \(FIRM\): 2Q22 \(9 Jun 2022\)](#)
- [Cross-Asset Strategy: US Fixed Income Rotation Model \(FIRM\): 1Q22 \(3 Feb 2022\)](#)

CORE+ and AGG+ Optimal Portfolios

Analyst: Serena Tang***What is it/how is it used?***

The goal for CORE+ and AGG+ optimal portfolios is to beat risk/reward of a benchmark of core fixed income – the US AGG – or a custom benchmark comprised of liquid fixed income (what we will call the 'CORE+ benchmark'), while still keeping volatility as close to these benchmarks as possible.

Unlike FIRM, which considers the gamut of US fixed income assets, AGG+ and CORE+ focus on the more liquid segments; AGG+ includes segments within US AGG, while CORE+ includes the 'core' fixed income assets in US AGG, but also liquid fixed income markets like HY corporate and EM sovereign debt.

Exhibit 40: CORE+ N12M portfolio as of June was OW MBS, OW IG, HY corporates and EM sovereigns, UW US government bonds

CORE+ N12M Portfolio*Targeting Same Volatility As 'Core USD Fixed Income' While Maximizing N12M Expected Returns*

	CORE+ Wght	Bench. Wght	CORE+ Tilt	1M Wght Chg	UW	Neu	OW
US CORE FIXED INCOME	100%	100%					
Treasuries	16%	35%	-19%	-19%	●	○	●
1-3Y	5%	12%	-7%	-14%	●	○	○
3-7Y	3%	13%	-10%	-2%	●	○	○
7-10Y	3%	3%	-0%	1%	○	○	●
10-20Y	2%	2%	+0%	0%	○	○	●
20Y+	3%	5%	-2%	-3%	○	○	●
Securitized	39%	30%	+9%	24%	○	○	●
MBS	37%	28%	+9%	25%	○	○	●
CMBS	2%	2%	-0%	-1%	○	○	●
Corporate	27%	25%	+2%	-6%	○	○	●
1-5Y	10%	9%	+1%	-4%	○	○	●
5-10Y	6%	7%	-1%	-2%	○	○	●
10Y+	11%	9%	+2%	0%	○	○	●
OTHER FIXED INCOME	18%	10%	+8%				
HY Corporate	11%	6%	+5%	1%	○	○	●
EM Sovereign	8%	4%	+4%	0%	○	○	●

Source: Morgan Stanley Research

Exhibit 41: CORE+ LR portfolio as of June was OW IG, HY corporates and EM sovereigns, EW MBS, UW US government bonds

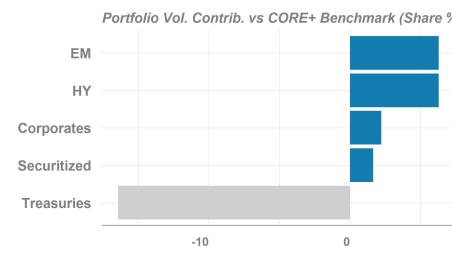
CORE+ LR Portfolio

Targeting Same Volatility As 'Core USD Fixed Income' While Maximizing LR Expected Returns

	CORE+ Wght	Bench. Wght	CORE+ Tilt	1M Wght Chg	UW	Neu	EW
US CORE FIXED INCOME	100%	100%					
Treasuries	19%	35%	-16%	0%	●	○	●
1-3Y	3%	12%	-9%	0%	●	○	○
3-7Y	10%	13%	-3%	1%	●	●	○
7-10Y	3%	3%	-0%	1%	●	○	●
10-20Y	1%	2%	-1%	-1%	●	●	●
20Y+	1%	5%	-4%	-2%	●	●	●
Securitized	31%	30%	+1%	-3%	●	○	●
MBS	28%	28%	+0%	-3%	●	●	●
CMBS	2%	2%	+0%	0%	●	○	●
Corporate	33%	25%	+8%	4%	●	○	●
1-5Y	13%	9%	+4%	2%	●	○	●
5-10Y	8%	7%	+1%	0%	●	●	●
10Y+	13%	9%	+4%	2%	●	●	●
OTHER FIXED INCOME	18%	10%	+8%	-1%	●	○	●
HY Corporate	10%	6%	+4%	-1%	●	○	●
EM Sovereign	7%	4%	+3%	0%	●	●	●

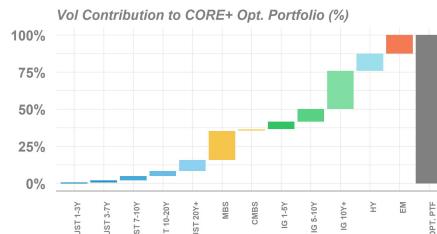
Source: Morgan Stanley Research

Exhibit 42: CORE+ N12M vol target portfolio volatility contribution versus benchmark – June 2022



Source: Morgan Stanley Research

Exhibit 43: CORE+ N12M vol target portfolio volatility contribution by asset – June 2022



Source: Morgan Stanley Research

Methodology

AGG+ and CORE+ build on the framework we've previously laid out in our Fixed Income Rotation Model (FIRM), using Markowitz mean-variance portfolio optimisations to determine what the optimal asset allocation for an unlevered, total return-focused investor looks like, subject to constraints.

Our optimal portfolios make use of: 1) Morgan Stanley fixed income strategists' forecasts – usually updated twice a year; 2) The cross-asset team's long-term capital market assumptions – updated weekly; and 3) Historical volatility and covariances as inputs for the portfolio-optimisation process.

Update frequency: Monthly

Where to find it: Cross-Asset Dispatches: AGG+ and CORE+ Optimal Fixed Income Portfolios

Related report(s):

- [Cross-Asset Dispatches: Optimal Fixed Income Portfolios \(24 Apr 2022\)](#)
- [Cross-Asset Dispatches: AGG+ and CORE+ Optimal Fixed Income Portfolios: June 2022 \(24 Jun 2022\)](#)
- [Cross-Asset Dispatches: AGG+ and CORE+ Optimal Fixed Income Portfolios: May 2022 \(27 May 2022\)](#)

Cross-Asset Diversifiers – Correlation and Valuations (COVA)

Analyst: Serena Tang

What is it/how is it used?

Our COVA scorecard comprises five components which we think that an investor needs to care about when looking for a good diversifier:

- **Does it diversify?** The asset needs to have a low/negative correlation to global equities.
- **Can it diversify consistently?** We look at the stability of that correlation across time, rewarding assets with a more stable correlation to global equities.
- **Does it work when it needs to?** The level of correlation only tells you half the story. The downside beta, which is the beta to global equities when stocks are falling, gives us a better picture of whether the diversifier is able to 'work' in market stress scenarios. We reward assets with a low/negative downside beta to equities.
- **Does it have good value?** A common perception is that assets which help to diversify are rarely cheap. This component rewards assets which are cheap relative to their own history.
- **Does it cost a lot to hedge?** Buying a hedge is like buying insurance – it comes with a cost. To ensure that we are not overpaying for our hedge, this component aims to sieve out assets which have a low cost of carry versus their own history.

Our COVA scorecard ranks different assets in a consistent way across these five metrics, enabling us to screen for good, reliable and cheap diversifiers every week. We make use of this scorecard in deciding hedges for our top trades portfolio. Additionally, a COVA portfolio which is systematically long the top five assets based on the scorecard every month has historically fared better as a diversifier than just buying vol.

Exhibit 44: Current top diversifiers based on COVA

Long/ Short	Asset	Corr.	Stability	Downside Beta	Valuation	Cost of Carry	Overall COVA score	Hedge Ratio (\$mn per \$1mn of equity risk)
Long	Cons Staples vs Mkt	87	88	68	70	69	76	1.9
Long	Industrials vs Mkt	56	66	48	98	100	73	11.8
Short	IT vs Mkt	72	59	54	78	96	72	3.4
Long	MSCI EM vs S&P 500	61	49	50	93	100	71	2.6
Short	ZARUSD	77	99	73	19	95	71	2.3
Long	Topix vs S&P 500	59	53	54	87	98	71	5.3
Long	S&P 500 vol	95	100	62	7	89	69	3.5
Long	Value vs Growth	70	45	51	75	94	68	2.4
Long	US HY vol	92	100	56	3	98	68	10.3
Short	Cons Disc vs Mkt	71	71	51	57	89	67	3.3
Short	CADUSD	86	84	66	48	55	67	3.4
Short	GBPUUSD	79	90	63	43	66	67	3.5

Source: Morgan Stanley Research; Note: Overall score is a weighted average of correlation score (60%) and valuation score (40%). We show 'long' for assets with <10% average 20y correlation to MSCI ACWI, and 'short' for assets with average correlation of >10%. Scores are based on the direction of the trade. Hedge ratio is computed using the inverse of historical beta to global equities over the last year. For assets with low correlation to MSCI ACWI (<20%), we use the inverse of relative vol to global equities as its hedge ratio. Hedge ratios of long-vol strategies are expressed in terms of how much an investor would need to do to get a 8% vol equivalent of risk.

Methodology

Correlation score (60% weighting)

- **Level of correlation to global equities:** We take an average of 6-month and 10-year correlations to global equities, with the former more representative of the current market relationship and the latter a slower-moving anchor.
- **Downside beta to global equities:** This is the beta of the asset to global equities only in 'down' periods. We use a 10-year average of 3-year downside beta.
- **Stability of over time:** We use a 10-year interpercentile range (5th versus 95th percentile) of rolling 6-month correlations as a proxy for correlation stability, giving more credit to assets with stable and reliable correlation to equities.

Valuation score (40% weighting)

- **Valuation versus its own history:** We look at a 10-year percentile of specific valuation metrics for each asset class, such as price-to-book ratio for equities, REER for FX, real yields for rates, loss-adjusted spread for credit and inflation-adjusted price for commodities.
- **Cost of hedging (carry) versus its own history:** We use carry of each asset relative to the last 10 years, assigning a higher score to assets which have a lower cost of hedging versus its history. This ensures that we are not constantly penalising assets which have a higher cost of hedging relative to other assets, even if its cost of hedging is the lowest it has been across its own history.

Based on the five components above, we compute an overall COVA score and use this to rank assets and identify good diversifiers every week. While this score is run on the global equities index, MSCI ACWI, this clear and systematic approach can be easily applied to any portfolio benchmark.

Update frequency: Weekly

Where to find it: [Cross-Asset Spotlight: Signals, Flows & Key Data](#)

Related report(s):

- [Cross-Asset Dispatches: Finding Diversification in a Low-Yield World \(8 Jun 2020\)](#)

Key Cross-Asset Data We Track

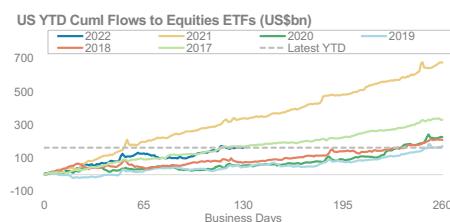
Cross-Asset ETF Flows Tracker

Analyst: Soham Sen, Serena Tang

What is it/how is it used?

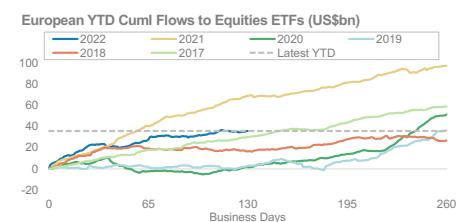
The tracker provides a gauge of demand across assets and regions, allowing us to better analyse cross-asset sentiment and positioning.

Exhibit 45: Year-to-date cumulative US flows to equity ETFs



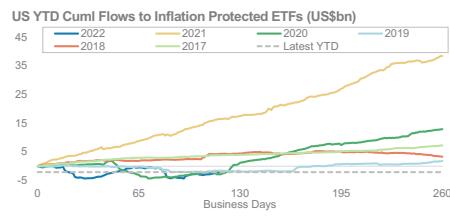
Source: Bloomberg, Morgan Stanley Research

Exhibit 46: Year-to-date cumulative European flows to equity ETFs



Source: Bloomberg, Morgan Stanley Research

Exhibit 47: Year-to-date cumulative US flows to inflation-protected ETFs



Source: Bloomberg, Morgan Stanley Research

Exhibit 48: Year-to-date cumulative US flows to consumer staples ETF



Source: Bloomberg, Morgan Stanley Research

Methodology

Our database captures data for ~6,000 top exchange-traded products by assets, focused on equities, fixed income, commodities and other markets like currency and volatility. Given how concentrated assets are within the biggest ETFs – the top 10 biggest ETFs hold 20% of the US\$9.3 trillion total assets in our coverage – we are relatively confident that the funds in our dataset are broadly representative of the overall ETF universe.

Exhibit 49: US ETF fund flows

		US ETF Fund Flows												
		Assets (US\$ bn)		Short Interest		Trailing 1W		Trailing 3M		Trailing 12M		5Y Zscore		
				Latest	1M Chg	Flow (US\$ mn)	1W %	Flow (US\$ bn)	3M %	Flow (US\$bn)	12M %	1W	3M	12M
EQUITIES	4,653	4.3%	↑	157	0.0%	34.4	0.6%	499.1	9.9%	-0.5	-1.2	-0.2		
US	3,642	4.9%	↑	-1,456	-0.0%	26.1	0.6%	388.3	10.1%	-0.5	-1.3	0.1		
International	1,011	2.0%	↓	1,613	0.2%	8.3	0.7%	110.8	9.0%	-0.1	-0.7	-0.5		
Global	865	1.8%	↓	1,254	0.1%	13.3	1.3%	100.9	9.7%	-0.3	-0.7	-0.7		
Europe	46	2.9%	↑	-362	-0.8%	-7.8	-12.3%	-4.3	-6.5%	-0.6	-1.6	-0.5		
Japan	20	1.8%	↓	74	0.4%	0.7	3.3%	0.9	3.9%	0.4	0.6	0.6		
APxJ	68	6.1%	↓	657	1.0%	2.4	3.3%	12.4	15.7%	1.1	0.1	0.4		
EM	264	3.5%	↑	98	0.0%	3.4	1.1%	33.6	10.4%	-0.3	-0.3	-0.2		
FIXED INCOME	1,211	3.4%	↑	9,733	0.8%	53.3	4.4%	164.8	13.9%	1.2	-0.2	-1.9		
US FI	1,060	3.7%	↑	9,640	0.9%	54.5	5.2%	152.5	14.9%	1.5	0.4	-1.4		
US Agg	274	0.5%	↓	256	0.1%	3.5	1.3%	26.8	9.6%	-0.4	-1.0	-1.4		
US Govt	224	3.3%	↑	6,018	2.6%	45.4	25.0%	81.5	51.7%	1.7	2.0	0.8		
US MBS	47	1.1%	↑	-151	-0.3%	0.5	1.0%	-2.0	-3.7%	-0.9	-0.9	-0.3		
US IG	219	4.7%	↑	857	0.4%	2.3	1.0%	10.0	4.2%	0.2	-0.7	-1.4		
US HY	71	23.6%	↑	1,416	2.0%	-4.1	-5.0%	-5.7	-6.3%	0.8	-0.8	-1.2		
Munis	92	1.7%	↑	938	1.0%	9.4	11.3%	22.7	29.9%	1.0	1.7	0.4		
EM Credit	20	5.0%	↓	60	0.3%	-1.1	-4.5%	-1.2	-4.1%	0.1	-1.1	-1.3		
EM Local	6	8.5%	↑	-150	-2.6%	0.8	14.0%	1.2	21.4%	-0.5	0.9	0.0		
COMMODITIES	142	2.1%	↓	-2,891	-1.9%	-6.3	-3.8%	6.7	4.8%	-2.3	-0.9	-0.4		
Energy	5	4.0%	↓	-65	-1.2%	-0.5	-9.4%	-1.7	-33.6%	-0.2	-0.2	-0.4		
Gold	110	2.2%	↓	-2,027	-1.7%	-4.7	-3.7%	1.1	1.0%	-0.1	-0.9	-0.5		
ESG	87	1.1%	↑	-139	-0.2%	-0.7	-0.7%	14.5	15.8%	-0.7	-1.4	-1.2		
ESG Equity	82	1.2%	↑	-152	-0.2%	-0.9	-0.9%	12.5	14.3%	-0.7	-1.4	-1.2		
ESG FI	6	0.3%	↑	13	0.2%	0.2	3.8%	2.0	43.9%	-0.6	-1.2	-1.5		

Source: Bloomberg, Morgan Stanley Research. Note: Data as of Wed 6 July 2022. Totals show assets and flows for unlevered funds only. Categories not exhaustive. Short interest <10th percentile are highlighted in green, >90th percentile are in red. '3M Flow' shows rolling 3M net flows over the last 12 months.

Update frequency:

Where to find it: Cross-Asset Spotlight: Signals, Flows & Key Data

Related report(s):

- [Cross-Asset ETF Flows \(11 September 2020\)](#)

Cross-Asset Correlation Indices

Analyst: Phanikiran Naraparaju

What is it/how is it used?

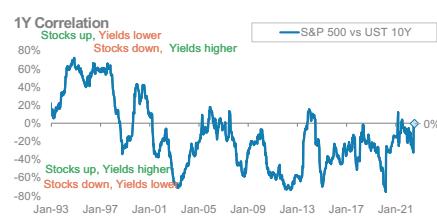
A difficulty in dealing with correlation is the exponential increase in numbers to keep track of as the number of asset increases. Extracting insight and intuition out of a pairwise correlation matrix even if one includes a handful of regions and asset classes still proves to be a challenge. A simple approach to extract information is to construct market aggregates of key cross-regional and cross-asset correlations, which works well in capturing key trends from a broader perspective.

Exhibit 50: Cross-asset correlations and where they stand on their 10-year range

	1Y Correlation				
	Current	1m Chg	10Y Median	Z-score	10Y Range
EQUITY & RATES					
S&P 500 vs UST 10Y	0%	↑ 14%	-27%	1.4	-80% 0% 80%
SX5E vs Bunds 10Y	-16%	↑ 10%	-24%	0.5	
FTSE 100 vs Gilts 10Y	-19%	↑ 16%	-17%	-0.2	
Topix vs JGB 10Y	-36%	↓ -16%	-17%	-1.0	
S&P 500 vs US 10Y B/E	35%	↓ -5%	46%	-0.8	
EQUITY & FX					
S&P 500 vs DXY	-43%	↓ -28%	-11%	-1.0	-80% 0% 80%
Eurostoxx 50 vs EUR	39%	↑ 45%	-3%	1.4	
FTSE 100 vs GBP	63%	↑ 35%	5%	2.3	
Topix vs JPY	-35%	↑ 5%	-54%	0.8	
MSCI EM vs USD	-56%	↓ -3%	-63%	0.5	
EQUITY & CREDIT					
S&P 500 vs US IG	62%	↑ 13%	53%	0.8	-80% 0% 80%
S&P 500 vs US HY	68%	↑ 5%	71%	-0.3	
Eurostoxx 50 vs EU IG	78%	↑ 27%	56%	2.0	
EQUITY & COMMODITY					
S&P 500 vs Brent	15%	↓ -18%	42%	-1.2	-80% 0% 80%
S&P 500 vs Gold	-11%	↓ -15%	-6%	-0.4	
S&P 500 vs Silver	11%	↓ -6%	11%	-0.2	
S&P 500 vs Copper	35%	↑ 14%	22%	0.2	
RATES & COMMODITY*					
UST 10Y vs Brent	17%	↓ -27%	30%	-0.4	-80% 0% 80%
UST 10Y vs Gold	-22%	↑ 11%	-36%	0.9	

Source: Bloomberg, Morgan Stanley Research; Note: *Rates correlations in yield terms here but in price terms for the rest. Black dot represents current correlation. Dark blue shaded box shows interquartile range over the last five years, while light blue box shows 5th to 95th percentile over the last five years. Black line represents five-year median. Current correlation column shows 1Y correlation on weekly returns/yield changes.

Exhibit 51: 1Y correlation: S&P 500 versus UST 10Y



Source: Bloomberg, Morgan Stanley Research

Exhibit 52: 1Y correlation: TOPIX versus JPY



Source: Bloomberg, Morgan Stanley Research

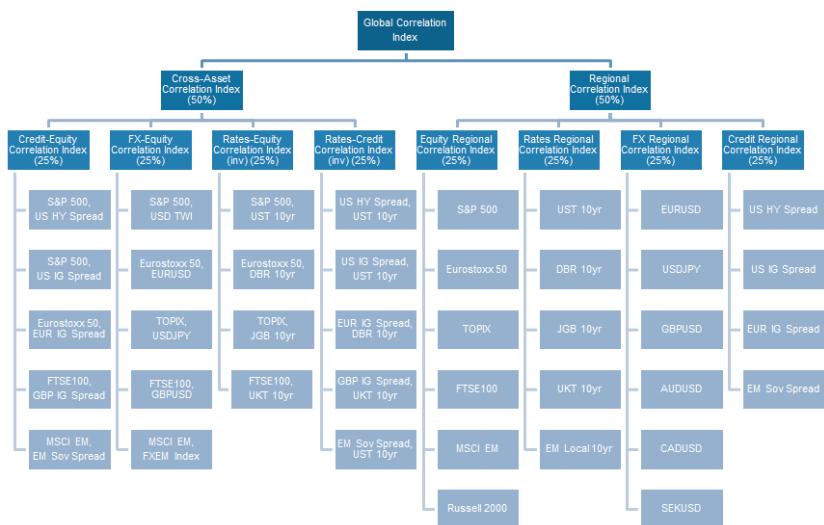
Methodology

The Morgan Stanley global correlation index is constructed using the average of the regional and cross-asset correlation indices, which in turn is an average of the underlying

pairwise correlation between listed assets. The aggregate index is constructed from two parts:

- 1. Regional correlations:** Geographic diversification within the asset class is the most basic form of diversification. The first part of the overall aggregate is the regional correlation index, e.g., for equity, we take average pair-wise correlations for five equity indices (S&P 500, MSCI Europe, TOPIX, MSCI EM and Russell 2000).
- 2. Cross-asset correlations:** The second part is cross-asset correlations within a region, e.g., rates-equity correlation within a region, and then averaged across regions. We use a specific set of asset pairs (e.g., S&P 500 and UST 10yr, MSCI Europe and Bund 10yr, etc.) for the sub-indices (rates-equity, rates-credit, FX-equity, credit-equity).

Exhibit 53: Correlation index components



Source: Morgan Stanley Research

Update frequency: Weekly

Where to find it: [Cross-Asset Spotlight: Signals, Flows & Key Data](#)

Related report(s):

- [Cross-Asset Dispatches: Correlations Diverge \(20 Sep 2015\)](#)
- [Cross-Asset Dispatches: Bond-Equity Correlations Are Changing \(18 Nov 2018\)](#)

FX-Hedged Yields

Analyst: Phanikiran Naraparaju

What is it/how is it used?

The FX-hedging decision can influence cross-border investing as much as the asset economics. We track FX-hedged yields across asset classes.

Exhibit 54: FX-hedged dashboard: What are FX-hedged yields for equities and bonds for investors in different currencies

Local Yield	USD Investor				EUR Investor				GBP Investor				JPY Investor			
	FHY	Δ 1m	LT Avg	Last Z-score	FHY	Δ 1m	LT Avg	Last Z-score	FHY	Δ 1m	LT Avg	Last Z-score	FHY	Δ 1m	LT Avg	Last Z-score
DM EQUITIES																
S&P 500	1.7%	1.7%	13	1.9%	-1.1%	-55	1.3%	-	0.9%	-35	2.3%	-	-1.1%	-76	0.0%	-
Eurostoxx	3.7%	6.6%	115	4.2%	3.7%	39	3.6%	-	5.8%	63	4.6%	-	3.7%	17	2.6%	-
Japan	2.6%	5.5%	109	3.7%	2.5%	34	3.0%	-	4.6%	58	4.1%	-	2.6%	12	1.7%	-
UK	4.1%	5.0%	71	3.5%	2.1%	-1	2.8%	-	4.1%	21	3.8%	-	2.1%	-23	1.9%	-
EM EQUITIES																
India	1.4%	-1.5%	66	-2.8%	-4.2%	0	-3.4%	-	-2.3%	20	-2.4%	-	-4.1%	-20	-4.5%	-
Mexico	3.7%	-3.2%	7	-3.0%	-5.7%	-55	-3.6%	-	-3.9%	-37	-2.7%	-	-5.7%	-74	-4.7%	-
Brazil	9.1%	-1.5%	4	-4.9%	-4.0%	-57	-5.4%	-	-2.2%	-39	-4.6%	-	-4.0%	-76	-6.4%	-
SouthAfrica	4.5%	0.8%	103	-2.7%	-1.9%	34	-3.4%	-	0.1%	56	-2.5%	-	-1.8%	14	-4.2%	-
Korea	2.1%	2.9%	51	1.2%	0.1%	-20	0.6%	-	2.1%	0	1.6%	-	0.1%	-41	-0.6%	-
GOVT. BONDS																
UST 10yr	2.9%	2.9%	-11	3.2%	0.1%	-79	2.6%	-	2.1%	-60	3.6%	-	0.1%	-101	1.3%	-
JGB 10yr	0.2%	3.1%	95	2.8%	0.2%	22	2.1%	-	2.3%	45	3.2%	-	0.2%	0	0.8%	-
Bund 10yr	1.2%	4.1%	61	3.0%	1.2%	-12	2.3%	-	3.3%	11	3.3%	-	1.2%	-33	1.0%	-
BTP 10yr	3.1%	6.1%	48	4.2%	3.1%	-26	3.6%	-	5.3%	-4	4.6%	-	3.2%	-48	2.3%	-
EM Local																
Brazil 10y	13.3%	2.2%	22	4.0%	-0.3%	-41	2.9%	-	1.5%	-23	3.6%	-	-0.3%	-61	2.7%	-
Mexico 10y	8.9%	1.7%	-7	2.2%	-0.9%	-72	1.2%	-	0.9%	-53	1.9%	-	-0.9%	-92	1.2%	-
S. Africa 10y	9.1%	5.3%	130	2.7%	2.5%	58	2.0%	-	4.5%	81	3.0%	-	2.5%	38	0.8%	-
Korea 10y	3.3%	4.1%	47	3.2%	1.3%	-24	2.7%	-	3.3%	-4	3.7%	-	1.3%	-46	1.5%	-
CREDIT (Loss-Adj.)																
US IG	4.5%	4.5%	28	4.3%	1.7%	-43	3.7%	-	3.7%	-22	4.7%	-	1.7%	-64	2.3%	-
EUR IG	2.8%	5.7%	111	3.3%	2.8%	36	2.6%	-	4.9%	59	3.6%	-	2.8%	14	1.7%	-
US HY	6.6%	6.6%	157	5.7%	3.6%	82	5.1%	-	5.7%	105	6.1%	-	3.6%	60	3.7%	-
EUR HY	6.1%	9.2%	293	5.9%	6.1%	211	5.3%	-	8.3%	238	6.4%	-	6.1%	188	4.2%	-

Source: Bloomberg, Morgan Stanley Research; Note: 1) FHY (FX hedged yield) is the annualised 3-month carry earned by the local investor in the foreign asset. The calculation uses a rolling hedge of 3-month FX forward and does not assume a maturity-matched hedge. 2) Z score for the FHY is based on historical data from 2000 present.

Methodology

Our FX-hedged yields dashboard uses 3-month FX forwards to calculate the carry earned by the local investor on a foreign asset. We show annualised carry, and do not assume a maturity-matched hedge.

Exhibit 55 shows an example calculation. When a USD investor sells dollars to buy EUR equities, they are exposed to the risk of EUR declines eating away at any performance of the carry. Investors can hedge out their currency risk by selling the EUR forward and lock in a currency gain of ~2.9%. Along with the dividend yield of ~3.7%, the carry on holding FX-hedged European equities is about ~6.6%. In effect, European equities have about a 4.9% head start (6.6% FX-hedged yield versus 1.7% dividend yield in the US) over US equities.

Exhibit 55: FX-hedged yield of Eurostoxx for USD investors

USD Investor Cashflows

Buy EUR sell USD @	1.02
Sell EUR/USD 3M Fwd @	1.03
Lock in USD/EUR Carry vs. Spot	2.9%
Buy Eurostoxx with EUR cash @	3422
Earn Eurostoxx dividends@	3.7%
Total FX-hedged dividend yield	6.6%

Source: Morgan Stanley Research

Update frequency: Weekly

Where to find it: [Cross-Asset Spotlight: Signals, Flows Key Data](#)

Related report(s):

- [Cross-Asset Dispatches: Revisiting FX-Hedged Yields \(9 Oct 2018\)](#)
- [Cross-Asset Dispatches: Getting Paid to Hedge \(11 Apr 2018\)](#)

Cross-Asset Volatility Monitor

Analyst: Phanikiran Naraparaju

What is it/how is it used?

Derivatives markets are a valuable source of information on what markets expect about the distribution of future prices. The monitor aims to use them to measure what is in the price across different markets, and identify misalignments across asset classes. It also screens for major divergences between what is implied by option prices and Morgan Stanley forecasts.

The monitor helps us answer some key questions:

- **How much volatility does the market expect?** (Implied Volatility): The absolute level of implied volatility and recent performance is the simplest measure of what's in the price.
- **How does this compare to recent events?** (Ratio of Implied to Realised Volatility): The implied to realised vol ratio is another important measure of the 'fear' premium in the market.
- **Does the market expect a major downside risk?** (Volatility Skew): The volatility skew shows the relative appetite for puts versus calls and is an indicator of hedging activity. It is not always straightforward to read as there is a tendency for the skew to steepen when the absolute level of vol is too low and flatten when the absolute level of vol is too high.
- **How different will the future be from the present?** (Volatility Term Structure): Term structure represents a relative preference for gamma (expectation of price moves in the next three months) versus vega (longer-term risk premium).
- **Is correlation expected to be high or low?**

Exhibit 56: Cross-asset volatility monitor

Index	Implied Daily Move	Implied Vol 3m (IV3m)		Vol Carry IV3m - RV1m		Vol Skew 3m*		Term Structure (3m-1y)	
		Now	Δ1m on 15yr Range	Now	Δ1m on 15yr Range	Now	Δ1m on 15yr Range	Now	Δ1m on 15yr Range
Equities									
S&P 500	1.53%	24.3%	-4.2%	7.9%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%
Russell 2000	1.81%	28.7%	-3.8%	8.5%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%
Nasdaq	1.92%	30.5%	-5.0%	8.9%	-1.6%	-1.6%	-1.6%	-1.6%	-1.6%
Eurostoxx 50	1.64%	26.1%	-0.7%	8.6%	-2.9%	-2.9%	-2.9%	-2.9%	-2.9%
FTSE 100	1.34%	21.2%	-2.8%	7.6%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%
Nikkei	1.35%	21.4%	0.5%	6.4%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%
MSCI EM	1.52%	24.1%	-0.9%	6.2%	0.7%	0.7%	0.7%	0.7%	0.7%
Hang Seng	1.64%	26.0%	0.8%	5.4%	-2.3%	-2.3%	-2.3%	-2.3%	-2.3%
Kospi	1.30%	20.6%	-3.5%	4.7%	-1.2%	-1.2%	-1.2%	-1.2%	-1.2%
Rates									
US10y	8.4	133	-22	-8	-21	-21	-21	-21	-21
EU10y	8.8	140	-46						
Credit									
CDX HY	0.82%	13.0%	2.0%						
CDX IG	3.9	62	19						
Commodities									
BrentCrude	3.27%	52.0%	8.4%	-4.2%	-2.8%	-2.8%	-2.8%	-2.8%	-2.8%
Gold	1.17%	18.6%	3.7%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
G10 FX									
JPY	0.79%	12.5%	0.5%	-1.4%	-1.4%	-1.4%	-1.4%	-1.4%	-1.4%
EUR	0.68%	10.8%	1.4%	2.2%	-0.7%	-0.7%	-0.7%	-0.7%	-0.7%
GBP	0.73%	11.6%	-0.7%	2.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%
AUD	0.82%	13.0%	-0.6%	2.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%
CAD	0.53%	8.5%	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%
FXEM									
BRL	1.33%	21.1%	4.6%	1.9%	-1.4%	-1.4%	-1.4%	-1.4%	-1.4%
MXN	0.83%	13.2%	0.0%	3.3%	0.1%	0.1%	0.1%	0.1%	0.1%
CNH	0.34%	5.4%	-0.7%	0.7%	0.1%	0.1%	0.1%	0.1%	0.1%
KRW	0.63%	10.1%	2.2%	1.5%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%
ZAR	1.06%	16.9%	1.0%	2.5%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%

Source: Morgan Stanley Research; Notes: Components of the scorecard: A) 3m implied vol. B) Vol carry: Defined as the difference between 3-month implied vol and 1-month realised vol. C) Vol skew (3m): 1) Defined as OTM put ~ OTM call 2) Defined as 25-delta skew for equities, commodities and FX 3) Defined as +50/-50bp skew for US rates and +25/-25bp skew for EU rates 4) Defined as 80/130 skew for credit. D) Term structure: Defined as the difference between 1-year and 3-month implied vol

Methodology

We use implied vol from option markets.

Update frequency: Weekly (or daily upon request)

Where to find it: Cross-Asset Spotlight: Signals, Flows & Key Data

Related report(s):

- [Global Volatility Playbook: Waiting for a Pivot \(28 Jun 2022\)](#)

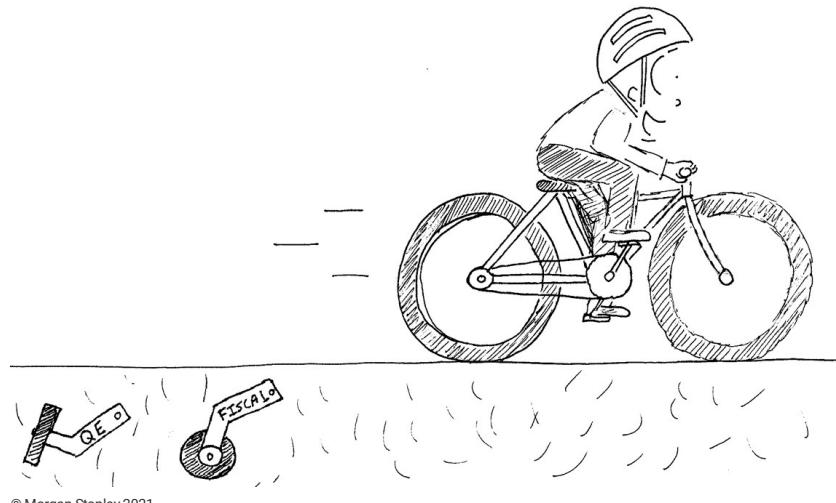
Bonus: Cross-Asset Cartoons

Analyst: Andrew Sheets

What is it/how is it used?

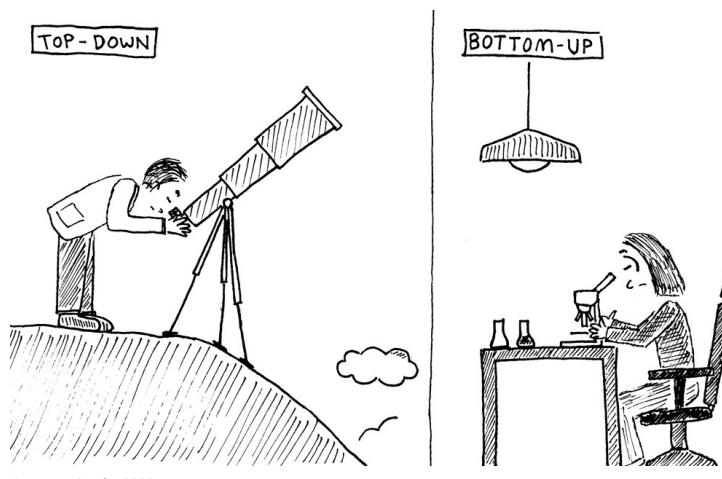
Our cross-asset cartoons – the finest, and possibly *only*, ones on the Street – provide special insight into various topical themes, injecting sometimes-dull reports – like this one – with a bit of levity, art and humour.

Exhibit 57:



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Exhibit 58:



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Update frequency: Whenever inspiration hits Andrew.

Where to find it: We like to put them in places you'd least expect. We highly encourage you to read all our reports to catch them all.

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(as of June 30, 2022)

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STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MISC
Overweight/Buy	1383	39%	320	42%	23%	595	39%
Equal-weight/Hold	1561	44%	353	46%	23%	715	47%
Not-Rated/Hold	0	0%	0	0%	0%	0	0%
Underweight/Sell	574	16%	87	11%	15%	215	14%
TOTAL	3,518		760			1525	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

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